S/N 09/281,464 PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	HORST et al.	Examiner:	Phuong M. Phu
Serial No.:	09/281,464	Group Art Unit:	2631
Filed:	March 30, 1999	Docket No.:	7611.26US01
Title:	METHOD AND APPARATUS FOR ASSIGNING ADDRESSES TO COMPONENTS IN A CONTROL SYSTEM		

DECLARATION OF FOLKERT HORST

1. I am Folkert Horst, a co-inventor of U.S. Patent Application Serial No. 09/281,464 filed March 10, 1999, entitled METHOD AND APPARATUS FOR ASSIGNING ADDRESSES TO COMPONENTS IN A CONTROL SYSTEM.

2. In February and June of 1994, I visited Theimeg Gmbh, in Germany, a supplier of radio remote control systems. During these visits, I saw a Theimeg remote control product. To the best of my recollection, I recall that address information may have been transferred from the locomotive to the remote control device by electronic components of a battery pack. A battery charger installed on the locomotive included components that temporarily transferred the locomotive address to the battery pack. When the battery pack was placed into the remote control device, the locomotive address was transferred from the battery pack to the remote control device. To the best of my knowledge and recollection, the discussion with Theimeg Gmbh did not concern the methods, devices, combinations or systems recited in the claims of the present application.

3. In 1994, CN Rail purchased a Remote Control Radio subsystem from Theimeg Gmbh, which included addressing plugs. This radio subsystem was tested during December of 1994 by CANAC, my employer at the time, and was used by CN Rail throughout 1995. To the best of my recollection, the addressing scheme had three matching plugs that stored addressing information. Two of the matching plugs were installed in the two remote operator control units respectively, and the third plug was installed in the locomotive control device within a

locomotive. As such, the remote operator control units were able to communicate with the locomotive control device to which the third matching plug was attached. To the best of my knowledge and recollection, the system used by CN Rail did not concern the methods, devices, combinations or systems recited in the claims of the present application.

4. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Dated: 18 JUNE 2004 By: _____

Folkert Horst

TELEFAX

Theimeg

Theimeg Elektronikgeräte GmbH & Co.

Address	Phone	Telex	Fax
Clörather Str.3	02162	8518853	02162
41748 Viersen	372-0	telm d	30724

To:

Company: CANAC International, Inc.
Address: 3950 Hickmore Avenue Saint-Laurent, Quebec H4T 1K2 CANADA
Fax-No.: 001-514-399-6004

From:

Name: Dan Quinlan
Department: - TEF -
Phone-No.: ext. 152

Attention: This Fax includes 4 pages. If anything is unreadable please contact our central office (0049-2162-372-0)!

Please deliver immediately to:

Name: Mr. Roberto Pellizzari
Department:

Subject: Clarification of RSS sections

30. April 1993

Enclosed are the additional points that were to be clarified by Theimeg. A time table and an addressing scheme is provided.

Remaining points that were to be clarified by Theimeg before April 16, 1993:
1) Radio Range Test - to be discussed on Monday May 3, 1993 in a meeting between Theimeg and CANAC.

2) Comments to Service Life - we can clarifiy this point when the definitions of the terms Service Life, MTBF and the Maintenance Philosophy of CN have been received.

3) Operation of the Emergency Output- A report dealing with the European Railroads experience on this issue (loss of communications, TILT) will be sent in May 1993.

We have received the first information to the items to be clarified by CANAC / CN (dated April 16, 1993). We have read these and are pleased with the results.

As of this time we have yet to receive clarifications for the following items:
1) Radio Specification: CN & CP Spec PSAA001-2
2) Radio Specification: CN Spec PS40101
3) Definition of MTBF
4) Definition of Service Life
5) Maintenance Requirements

Also any comments to our clarifications dated April 16, 1993 have not been received.

LOCOMOTIVE CONTROL SYSTEM
Flat Yard Beltpack System (FYBS)

1) 5.1.8. Addressing

Thelmeg is to submit an alternate addressing scheme, which is less reliant on Transportation procedures, for beltpacks for review.

Addressing Scheme

The radio remote control equipment that belongs to one locomotive will have a 'root' address. This means the locomotive (receiver/ decoder) and upto four beltpacks; beltpack A, beltpack B, beltpack A spare, beltpack B spare, will share the same 'root' address. As called for in the RSS upto 256 locomotives must be addressable. This means that this 'root' address must be at least eight (8) bits long. We have added a 9th bit for future use.
In order to indentify the different beltpacks in the system another two (2) bits must be added to the 'root' address. The combination of the 'root' address plus the beltpack ID will make up a beltpack address. Therefore each beltpack is uniquely addressed.

An address then has the following format:

```
Bit #   10  9  8  7  6  5  4  3  2  1  0
        |<--- root address ----->|  |--|
                                    beltpack ID
```

Example for Locomotive number 5:

```
0  0  0  0  0  0  1  0  1  0  0  --> beltpack A
0  0  0  0  0  0  1  0  1  0  1  --> beltpack B
0  0  0  0  0  0  1  0  1  1  0  --> beltpack A spare
0  0  0  0  0  0  1  0  1  1  1  --> beltpack B spare
```

In order to prevent that the 'original' beltpack and its 'spare' are active at the same time the following checks and actions will be performed by the different units:

a) Beltpack Check
When a beltpack is powered-up it monitors the RF channel in order to get its synchronization information. During this scanning it will also check that its 'spare' respectively its 'original' is not already active in the system. If this is the case then the beltpack that has just been powered-up will be automatically powered-down and therefore it is not possible to enter the system.

b) The repeater will also perform a check to assure that no 'orignal' and 'spare' beltpacks are active at the same time. If this happens (it is possible that the 'spare' did not hear the 'original' when it was powered-up) the repeater will NOT repeat

the telegrams from the beltpack that has been additionally powered up.

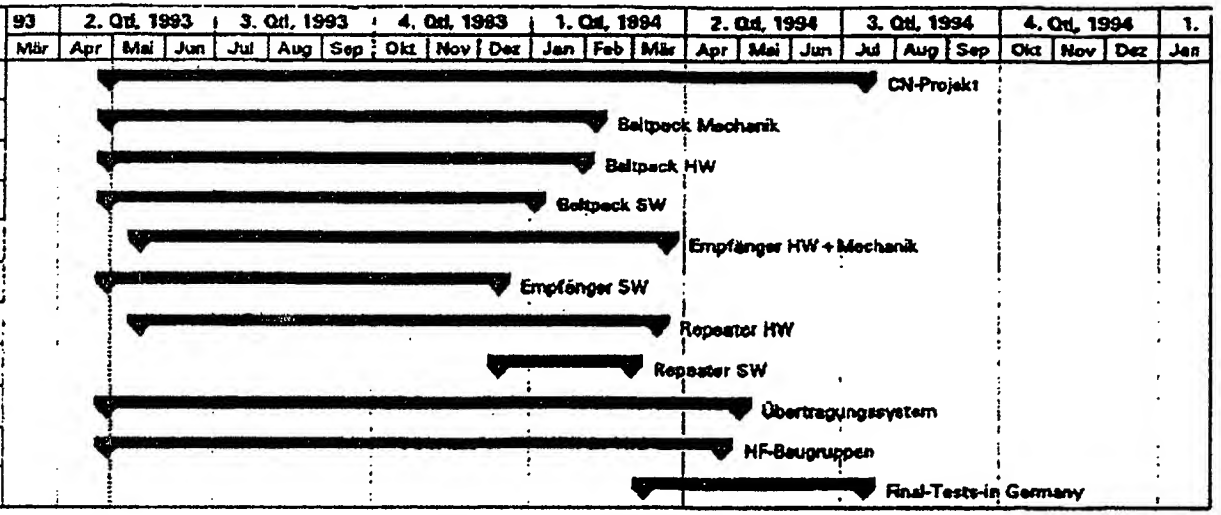
c) The receiver/decoder will also monitor the beltpack addresses to prevent 'double' beltpack use. If the receiver/decoder discovers that both beltpacks have been activated it will perform a Failsafe Output stop. (It would be a good idea if this situation could be reported to the MCU. This should be discussed during development.)

These actions will be performed regardless of the safety actions CN Transportation makes with their operators.

April 23, 1993

Theimeg

Nr.	Name	Dauer
1	1 CN-Projekt	317,92t
2	1.1 Beltpack Mechanik	200,56t
14	1.2 Beltpack HW	195,42t
30	1.3 Beltpack SW	175,42t
41	1.4 Empfänger HW + Mechanik	218,92t
54	1.5 Empfänger SW	167,08t
71	1.6 Repeater HW	215,25t
84	1.7 Repeater SW	50t
89	1.8 Übertragungssystem	262,92t
102	1.9 HF-Baugruppen	256,92t
119	1.10 Final Tests-in Germany	95t



Projekt: Timetable projekt-CN
Datum: 30.4.93

Geplant
Nicht kritisch
Nicht kritisch in Arbeit
Nicht kritisch

Nicht kritisch in Arbeit
Geplanter Meilenstein
Meilenstein
Zusammenfassung

Geplant Rolled Up
Roll Up

Based on the present specification situation

→ F HORST

TELEFAX

Thelmeg

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To:

Company: CANAC RTD

Address: 3950 Hickmore AV
St. Laurent, QC CANADA

Fax-No.: 001-514-399-6004

From:

Name: Dan Quinlan

Department: TEF

Phone-No.:

Attention: This Fax includes 7 pages. If anything is unreadable please contact our central office (0049-2162-372-0)!

Please deliver immediately to:

Name: MR. Roberto Pellizzari

Department:

RP.
21-03-94

Subject:

Roberto,

Here is the final version of the minutes of Meeting. Sorry it took so long

PLEASE FILE: EM 6085-905

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PROJECT: CN BA: 330.816 DATE: 03.14.94 file:cn\documnt\mcmeetnotice.txt

Page 1

Minutes of Meeting February 23-24, 1994

CN / CANAC / Theimeg

Present:	Cliff Johnstone	/ CN
	Gordon Patterson	/ CANAC
	Nelson Caldwell	/ CANAC
	Fred Horst	/ CANAC
	Roberto Pellizarri	/ CANAC
	Hans-Jürgen Wunderer	/ Theimeg
	Bernard Plum	/ Theimeg
	John Risch	/ Theimeg, Inc.
	Dan Quinlan	/ Theimeg

February 23

- Agenda Introduction (H. Wunderer)

- Project Status was introduced (H. Wunderer)
  *See Project Schedule 'Canadian National Radio Remote Control Project End Phase 1994' from 22.2.94

- CN Development Team was introduced (H. Wunderer)

- CN / CANAC have given 'OK' to perform environmental tests on ALL units, this means the units may look 'used' at delivery time.

- Theimeg's Quality Assurance Program was introduced (H. Wunderer)
  *The Quality Assurance Program is audited by the British Loyds Register. (See Certificate)
  *The Quality Assurance Program fulfills the requirements of
  ISO 9000,
  ISO 9001,
  ISO 9004.

- Theimeg's Safety Concept for the RSS was presented (H. Wunderer)
  *According to the TÜV the RSS is designed for maximum safety class 6 as defined by DIN V 19250. (See 'Anforderungsklassen')
  *The Beltpack, Receiver and Repeater are based on a double micro-controller system. (See 'Redundancy BP' and 'Redundancy Receiver')

- Presentation of Theimeg Worldwide (H. Plum)

- Presentation of Theimeg Viersen Internal Structure (H. Plum)

- Presentation of 800 MHz RF Modules (H. Grütz)
  *The prototypes have been completed, the optimization process is in progress.
  *The development completion date for the RF modules does not include the FCC or DOC certification.

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Action:
*The type approval for the RF Modules must be clarified. CANAC must contact CN S&C for inquiries on how to obtain DOC type approval. John Risch and CN S&C are to deal with the DOC. These actions must take place in two stages:
1) Testing Phase - The Railroad companies can normally perform these tests under their own direction without a special permit. It must be clarified immediatly whether CN/CANAC needs or wants a special permit for the testing phase. If a permit is needed, then for which frequency? The system is designed for the frequency band from 806 - 866MHz.
2) Type approval for final systems

Action:
*Theimeg is to supply a description of the Receiver/Transmitter module before the end of March.

- It was discussed that the channel spacing might be reduced in the future by the DOC. This would mean a reduction in some parameters of the system, ie: maximum number of Beltpack when keeping the poll rate at its present value or radio range.

Action:
*It was suggested that CN and CANAC become active in commitees that handle the regulations for RF in Canada.

Action:
*Theimeg will supply to CANAC/CN documents which explain the reasons why a smaller channel spacing for radio remote control of locomotives is not beneficial and further will analyse the trade-offs indicated above.

- Presentation of the Beltpack (H. Rehling / H. Wahl)
The following items were pointed out and must be improved or changed:
*The knob of the ON/OFF switch protrudes excessively.
*The ON/OFF switch detents are too soft.
*All screws must be tamper proof, this includes the screws for plexiglass plate over the LEDs and the screws holding the handles on the rotary switches. The 'snake eye' screws were suggested by CANAC/CN

Action:
*CANAC will provide Theimeg with tamper proof screw specs or sample.
*The end stops of the rotory switches must be improved to handle the 50 in-lb torque.
*The larger detent for the 'Emergency' position must be developed.
*It must be checked if the Beltpack wall surrounding the screws on the bottom can be changed. (If this is not possible at the moment it will be added to the future modals.)
*The cross on the harness must be changed so that it is lower on the back of the user. The present harness has the cross too high in the neck area.

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*C. Johnstone of CN Transportation Y.I.P. accepted the Theimeg harness in principle, except for the cross-over of the straps on the back. This cross is too high in the neck area. Theimeg is to lower this crossing. Final approval will only be given after the harnesses have been used by the operators.
*At power-up of the Beltpack the code 'Power-up Fault' is to be sent for at least 1 minute. This means if the user performs the reset procedure before the 1 minute is over the Beltpack will continue to transmit the 'Power-up Fault' code until the one minute elapses, at this point the Beltpack will transmit the 'Power-up Reset' code.
*Reseting the Beltpack from a fault condition. If the Beltpack is already in the correct brake position, ie by Power-up the auto-brake is in the FULL position, the user needs only to press the Reset Button and move the Auto-brake to Release.

Action:
*The correct actions for the resetting of the Beltpack from a Fault will be rewritten by CANAC and sent to Theimeg.
*The current handling of the TILT has a 1 second delay before beginning the TILT warning and also requires a 1 second delay before ending the warning, this is a filter so the warning can not be reset by a user 'rolling down a hill'.

Action:
*CN (Cliff Johnstone) will check if this filter is acceptable.

- Presentation of the Receiver and Repeater (Dan Quinlan)
*The Receiver and Repeater use the same electronics. The HW differences are only in the power supply, the mode selector switch and the number of saftey relays.
*The software in the two systems dictate the differences.
*The connectors on the front of the Receiver 'stick out' too far. (Thus the cabinet door can not be closed.) Theimeg presented possible solutions.

Action:
*CANAC will submit the exact measurements of the cabinet to Theimeg.

February 24

- Presentation of Transmission System (Dan Quinlan)
*The two types of system synchronization were presented, REPSYS which is synchronized by the Repeater and RECOSS in which the Receivers will sychronize amongst themselves.
*Present system can handle maximum 10 Beltpacks, 5 receives and 1 Repeater using only a single RF channel.

- Demonstration of Transmission System (Dan Quinlan)
*The REPSYS transmission system was demonstrated.
*The logging in of Beltpacks was demonstrated.
*The handling of Beltpack 'transmission slots' by the Repeater was demonstrated.

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PROJECT: CN BA: 330.816 DATE: 03.14.94 file:cn\docum\memo\meet(e).txt

*An operation of 10 Beltpacks, 5 Receivers and 1 Repeater running simultaneously on a single RF channel was shown (REPSYS operation only).

*A copy of the MCU-RSS interface simulation software program (source and executable) used by Theimeg was given to CANAC to confirm that the basic protocoll (CRC calculation etc) is correct.

Action:

*The simulation program will be tested in Canada by CANAC. Needed changes will be made, the results will be passed on to Theimeg.

- Discussion of Present Addressing Scheme used by the RSS
  *Each unit (Beltpack, Receiver and Repeater) contains one address plug.
  *The address plug has two seperate EEPROMs, one accessable by the MASTER micro-controller and one accessable by the SLAVE micro-controller.

  *The address(es) are programmed by Theimeg in the address plugs.
  *The Beltpack plug contains its own address and its associated Receiver addrress.
  *The Receiver plug contains its own address and its associocitated Beltpack A and Beltpack B addresses.
  *The Repeater plug contains its own address, this address is only needed internal to the RSS.

- Handling of Addresses
  *The addresses will be programmed by Theimeg. This assures that each address will exist only ONCE.
  *If a Beltpack in operation becomes defect, the defective Beltpack along with its operational mate will be taken out of service. Two reserve Beltpacks will then be put in use. The address plug in the Receiver will also be changed to match the two new Beltpacks. This allows continued operation until the defective Beltpack is repaired.

Action:

*A complete 'reserve set' of address plugs will be delivered with the system. This will be a Beltpack A, Beltpack B and Receiver address plug. (This is in addition to the plugs installed in the units at delivery.)

- Future Address Handling
  *CANAC is responsible to define an address scheme for review with CN Transportation.

- Safety Concept in MCU
  *The overall safety concept for the RSS including the MCU was discussed.
  *Theimeg must present the safety philosophy (including the MCU) to the TÜV (German Safety Regulatory Authority).

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*The governing safety rule for the system is 'In the presence of any single fault or interference on the transmission path it shall be possible that the operator can stop the locomotive.'
*The system safety overview and possibilities for the operator to stop the locomotive are described in the FYBS-RSS Specification sections 4.2.2 and 4.2.1.1.

Action
*Theimeg will approach the TÜV with the information provided in FYBS-RSS Specification sections 4.2.2 and 4.2.1.1.

- Discussion of Acceptance Procedures for the RSS
*Theimeg will perform the environmental tests as defined in the Specification for the RSS. These tests will be documented, procedure, results, etc. and will then be presented to CN and CANAC.
*In order to assure that the RSS operates as needed a Receiver and 2 Beltpacks will be delivered to CANAC before the final delivery date. This will allow CANAC to test the functionality of the RSS, including the interface to the MCU. This Receiver and Beltpack will have a software 'final version'. The test units may use an RF unit with 400MHz (RF power output to be low enough that no licensing is necessary for the laboratory tests, CANAC will provide Theimeg with the values that are allowable). This will allow any misunderstandings or mistakes to be corrected BEFORE the final delivery. Theimeg will try to deliver these units in 4 to 8 weeks.

- Discussion of Radio Range Test (H. Wunderer)
*The method of acceptance test used between Theimeg and the German Railroad was presented.

- Definition of Radio Range Test for the RSS
*Theimeg will perform range tests in the Railyards of the RAG (Ruhr Coal Association) both in direct link and in repeater link configurations.
*The first phase will be performed using a vehicle simulating a locomotive.
*The next phase will use a locomotive.
*Together with CANAC the needed radio range will be demonstrated at the RAG railway.
*Using the data acquired at the railyards, (RAG and CN) the parameters will be adjusted so that a 'range test' at Theimeg can be defined.
*The system used for these tests will be 'standards', thus they can be used to test the range at a Montreal railyard.
*This process has been accepted by CN and CANAC.

Action:
*Before final delivery CANAC and Theimeg will perform the radio range test together at the RAG railyard and Thaimeg's test range. The needed parameters to be measured will also be defined.

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defined.

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*Upon delivery this test will be repeated at a CN Railyard.

Discussion of Manuals
*CN Transportation writes its own users manuals. They will use the RSS Specification as a guideline.

Action:
*Theimeg is to provide CN with a description of all enhancements that are incorporated into the RSS. (ie: Error LED Function, 2 rates of Warn LED blinking, 2 types of Low Battery Warning)

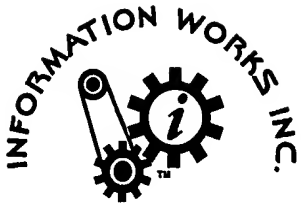
Action:
*CN will provide Theimeg with a copy of typoical, but not RSS competitor related, CN S&C Training and Repair Manuals for consultation.
*The service manuals shall be detailed to carry out changes down to the circuit board level.

Action:
*CANAC will receive from Theimeg, Inc. a service manual from the 'Easy Control'. The format of this manual will be checked by CANAC. Any format / information changes will be passed on to Theimeg.

- Presentation of 800MHz Internal Beltpack Antenna (H. Kösters)
*Designed for maximum signal strength, minimal operator influence, optimal vertical polarization and symmetrical horizontal diagram
*Each frequency (over a +/- 1 MHz frequency band) requires its own antenna, this means the slit must be changed. The physical outer dimensions of the all antennas remain the same.
*It is a slot type antenna internal to the Beltpack with a radiation efficiency of > 99%

- Discussion of Receiver Antenna (on Locomotive)
*Theimeg presented an omnidirectional broadband gain antenna from Kathrein. This antenna has a 3dB gain over a quarterwave antenna, and is lightning protected.
*Theimeg will provide the recommended antenna placement, seperation distance, for the locomotive.
*CANAC stated they are using an antenna from 'Antenna Specialists' with a 3db gain. Some antennas are available with a 5db gain.

Action:
*CANAC will provide the Locomotive antenna specifications to Theimeg.



EXPERT INFORMATION RESEARCH AND RETRIEVAL SERVICES

REMOTE CONTROL SYSTEMS FOR LOCOMOTIVES

Review of Technical and Trade Literature, 1980 forward

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DIALOG(R)File 4:INSPEC

7284829 INSPEC Abstract Number: B2002-07-8520-017, C2002-07-3360D-010
Title: Multiple radio remote control of locomotives in coupled trains
Author(s): Horl, F.; Pohl, S.; Witthuhn, M.
Author Affiliation: DB Systemtechnik, Deutsche Bahn AG, Munchen, Germany
Journal: Elektrische Bahnen vol.100, no.3 p.105-9
Publisher: Oldenbourg Publication Date: March 2002
Country of Publication: Germany CODEN: ELBAAQ ISSN: 0013-5437
SICI: 0013-5437(200203)100:3L.105:MRRC;1-L
Material Identity Number: E044-2002-003
Language: German Document Type: Journal Paper (JP)
Treatment: Applications (A); Practical (P)
Abstract: In a pilot project, German Railways has investigated traction of extra-long and heavy freight trains with two locomotives spaced out along the train length. Using radio transmission the system allows remote control and supervision of up to five engines by only one driver in the front cab. (2 Refs)
Subfile: B C
Descriptors: radio applications; rail traffic; railways; telecontrol; traffic control
Identifiers: multiple radio remote control; coupled trains; locomotives radio control; heavy freight trains; extra-long freight trains; radio transmission; traction
Class Codes: B8520 (Transportation); B6250 (Radio links and equipment); C3360D (Rail-traffic system control); C3250 (Telecontrol and telemetering components)

DIALOG(R)File 4:INSPEC

6868874 INSPEC Abstract Number: B2001-04-6250-050, C2001-04-3360D-025
Title: Radio-controlled train operation on a secondary line as a demonstration at EXPO 2000
Author(s): Krittian, F.
Journal: Elektrische Bahnen vol.98, no.5-6 p.186-7, 190
Publisher: Oldenbourg Publication Date: May-June 2000
Country of Publication: Germany CODEN: ELBAAQ ISSN: 0013-5437
SICI: 0013-5437(200005/06)98:5/6L.186:RCTO;1-A
Material Identity Number: E044-2001-001 Language: German
Document Type: Journal Paper (JP) Treatment: Practical (P)
Abstract: Deutsche Bahn tested interlocking by data transmission to trains and remote control of line elements, both by radio, to operate secondary lines without wayside signalling installations and thus more economically. A pilot project was presented in Westfalia at EXPO 2000. Basic features and details of this demonstration are described. (1 Refs)
Subfile: B C
Descriptors: radio applications; rail traffic; railways; telecontrol; traffic control
Identifiers: radio-controlled train operation; secondary line; EXPO 2000;

Deutsche Bahn; interlocking; data transmission; remote control; secondary lines operation; Westfalia

Class Codes: B6250 (Radio links and equipment); B8520 (Transportation); C3360D (Rail-traffic system control); C3250 (Telecontrol and telemetering components)

DIALOG(R)File 4:INSPEC

6859862 INSPEC Abstract Number: B2001-04-8520-033, C2001-04-3360D-017

Title: GPS/GNSS based train position locator for railway signalling

Author(s): Filip, A.; Bazant, L.; Mocek, H.; Cach, J.

Author Affiliation: DDC SZT Lab. of Intelligent Syst., Czech Railways, Pardubice, Czech Republic

Conference Title: Computers in Railways VII. Seventh International Conference on Computers in Railways. COMPRAIL 2000 p.1227-42

Editor(s): Allan, J.; Hill, R.J.; Brebbia, C.A.; Sciutto, G.; Sone, S.

Publisher: WIT Press, Southampton, UK

Publication Date: 2000 Country of Publication: UK 1307 pp.

ISBN: 1 85312 826 0 Material Identity Number: XX-2001-00342

Conference Title: Computers in Railways VII. Seventh International Conference on Computers in Railways. COMPRAIL 2000

Conference Date: 2000 Conference Location: Bologna, Italy

Language: English Document Type: Conference Paper (PA)

Treatment: Practical (P); Experimental (X)

Abstract: Recently, a real-time accuracy of the differential Global Position System (GPS) receivers achieved a sub-metre level in code mode, and centimetre level in the Real Time Kinematics (RTK) mode. Thus GPS receivers became promising for low cost signalling concepts and other safety critical applications in the railway industry. This paper presents a verification methodology and experimental results of the US's GPS and Russia's Global Navigation Satellite System (GLONASS) based train position locator tests at Czech Railways. The verification methodology is derived from the current needs in signalling, and from the parameters of the satellite navigation systems. A key element in the investigation is a switch, on which reliable and continuous position determination of a routing train is most critical. Two-dimensional and one-dimensional routing detection models are analysed and experimentally investigated on the switch-point. The trials were performed on Pardubice-Hradec Kralove-Chocen line with the total track length of 100 km. Three mobile platforms were employed for the tests: (1) an electric locomotive operating passenger train for the long term locator verification, (2) a diesel track motor-car for tests on a laboratory track in Pardubice-station, and (3) a remotely controlled ultra-light motor-driven track rover for the detailed locator tests. The data from/to the vehicles were transmitted along the entire trial track though the intelligent 150 MHz TDMA radio modem network with data rate up to 19.2 kb/sec. Finally, the safety-related requirements for future European navigation system GALILEO are specified and discussed. (1 Refs)

Subfile: B C

Descriptors: Global Positioning System; railways; satellite navigation;

signalling; traffic control
Identifiers: GPS/GNSS based train position locator; railway signalling; real-time accuracy; differential Global Position System receivers; Real Time Kinematics mode; low cost signalling concepts; safety critical applications; verification methodology; GLONASS; train position locator tests; satellite navigation systems; routing train; routing detection models; electric locomotive operating passenger train; long term locator verification; diesel track motor-car; remotely controlled ultra-light motor-driven track rover; TDMA radio modem network
Class Codes: B8520 (Transportation); B6250G (Satellite communication systems); B6330 (Radionavigation and direction finding); C3360D (Rail-traffic system control); C3370L (Control applications in remote signalling, dispatching and safety devices)

DIALOG(R)File 4:INSPEC

6823000 INSPEC Abstract Number: B2001-03-6210-004
Title: A distributed surveillance system for detection of abandoned objects in unmanned railway environments
Author(s): Sacchi, C.; Regazzoni, C.S.
Author Affiliation: Dept. of Biophys. & Electron. Eng., Genoa Univ., Italy
Journal: IEEE Transactions on Vehicular Technology v.49, no.5 p.2013-26
Publisher: IEEE,
Publication Date: Sept. 2000 Country of Publication: USA
CODEN: ITVTAB ISSN: 0018-9545 SICI: 0018-9545(200009)49:5L.2013:DSSD;1-1
Material Identity Number: I112-2001-001
U.S. Copyright Clearance Center Code: 0018-9545/2000/$10.00
Document Number: S0018-9545(00)07906-8 Language: English
Document Type: Journal Paper (JP) Treatment: Theoretical (T)
Abstract: In this paper, a distributed video-surveillance system for the detection of dangerous situations related to the presence of abandoned objects in the waiting rooms of unattended railway stations is presented. The image sequences, acquired with a monochromatic camera placed in each guarded room, are processed by a local PC-based image-processing system, devoted to detecting the presence of abandoned objects. When an abandoned object is recognized, an alarm issue is transmitted to a remote control center located a few miles from the guarded stations. A multimedia communication system based on direct sequence code-division multiple-access (DS/CDMA) techniques aims at ensuring secure and noise-robust wireless transmission links between the guarded stations and the remote control center where the processing results are displayed to the human operator. Results concern: 1) the performances of each local image processing system in terms of false-alarm and misdetection probabilities, and 2) the performances of the CDMA multimedia transmission system in terms of bit error rates (BERs) and quality of service (QoS). (24 Refs)
Subfile: B
Descriptors: code division multiple access; error statistics; image recognition; image sequences; object detection; quality of service; radio links; railways; spread spectrum communication; surveillance; video signal processing

Identifiers: distributed surveillance system; abandoned objects; unmanned railway environments; distributed video-surveillance system; dangerous situations; waiting rooms; unattended railway stations; image sequences; image-processing; remote control center; multimedia communication system; direct sequence code-division multiple-access; DS/CDMA techniques; wireless transmission links; guarded stations; false-alarm; misdetection; multimedia transmission system; bit error rates; BERs; quality of service; QoS

Class Codes: B6210 (Telecommunication applications); B6150E (Multiple access communication); B6135E (Image recognition)

DIALOG(R)File 4:INSPEC

6684980 INSPEC Abstract Number: B2000-10-8520-021, C2000-10-7445-003

Title: Communications-based yard control (CB:YC/sup TM/) system

Author(s): Denny, J.; Ruskauff, D.

Conference Title: Proceedings of the 2000 ASME/IEEE Joint Railroad Conference (Cat. No.00CH37110) p.95-110

Editor(s): Wolf, E.J.; Santini, A.M. Publisher: IEEE, Piscataway, NJ, USA

Publication Date: 2000 Country of Publication: USA 219 pp.

ISBN: 0 7803 6328 0 Material Identity Number: XX-2000-01869

Conference Title: Proceedings of the 2000 ASME/IEEE Joint Railroad Conference

Conference Sponsor: ASME; IEEE

Conference Date: 4-6 April 2000 Conference Location: Newark, NJ, USA

Language: English Document Type: Conference Paper (PA)

Treatment: Applications (A); Practical (P); Product Review (R)

Abstract: The author describes RailComm's Communications-Based Yard Control (CB::YC/sup TM/) system which is a low cost, highly reliable approach to automatic yard switch control and routing. CB::YC/sup TM/ consists of a PC-based, Windows NT application that remotely controls radio-equipped, solar-powered yard switch machines. The system utilizes no external cabling, thus eliminating the expense of bungalows and trenching. Maintenance and troubleshooting efforts are greatly improved through the modular construction of the switch machine and the system. Central control of yard routing improves efficiency, and the power switch operation reduces the risk of injury. (0 Refs)

Subfile: B C

Descriptors: microcomputer applications; rail traffic; railways; signalling; telecontrol; traffic control; traffic engineering computing

Identifiers: rail traffic telecontrol; Communications-Based Yard Control system; RailComm; CB::YC/sup TM/; automatic yard switch control; rail vehicle routing; Windows NT; PC; solar-powered yard switch machines; maintenance; troubleshooting; modular construction; central yard routing control; power switch operation

Class Codes: B8520 (Transportation); B6210J (Telemetry); C7445 (Traffic engineering computing); C3360D (Rail-traffic system control); C3250 (Telecontrol and telemetering components); C7420 (Control engineering computing); C3370L (Control applications in remote signalling, dispatching and safety devices)

DIALOG(R)File 4:INSPEC

6269097 INSPEC Abstract Number: B1999-07-8520-050, C1999-07-3360D-022
Title: GSM-R terminals for the railways
Author(s): Lasch, R.
Author Affiliation: Nortel GSM-Rail, Ulm, Germany
Journal: Signal und Draht vol.90, no.12 p.32-4
Publisher: Tetzlaff Verlag,
Publication Date: Dec. 1998 Country of Publication: Germany
CODEN: SIGDAN ISSN: 0037-4997 SICI: 0037-4997(199812)90:12L.32:TR;1-P
Material Identity Number: S092-1999-001 Language: German
Document Type: Journal Paper (JP) Treatment: Practical (P)
Abstract: With a view to maintaining competitiveness against other forms of transport, particularly in order to ensure smooth cross-border operations, and also in the light of the high-speed railway corridors being planned and in some cases already being implemented, the European railways aim to put in place the necessary network infrastructure for GSM-R. This communication medium will make it possible to integrate in a single network various railway communication services, such as mobile train, marshalling and maintenance telecommunications, but also safety-relevant services such as train control and radio remote control. Implementing GSM-R calls for careful planning at both the stationary and the mobile level. The article examines the requirements to be met by user terminals and the current stage of development. (0 Refs)
Subfile: B C
Descriptors: cellular radio; rail traffic; railways; signalling; telecommunication services; telecontrol; traffic control
Identifiers: rail traffic control; European railways; GSM-R terminals; communication medium; railway communication services; radio remote control; train control; implementation planning
Class Codes: B8520 (Transportation); B6210J (Telemetry); B6250F (Mobile radio systems); C3360D (Rail-traffic system control); C3370L (Control applications in remote signalling, dispatching and safety devices); C3250 (Telecontrol and telemetering components); C7420 (Control engineering computing); C7445 (Traffic engineering computing)

DIALOG(R)File 4:INSPEC

6269091 INSPEC Abstract Number: B1999-07-8520-047, C1999-07-3360D-019
Title: Function of a level crossing in the FFB-net
Author(s): Henning, S.
Author Affiliation: Scheidt & Bachmann, Monchengladbach, Germany
Journal: Signal und Draht vol.90, no.12 p.19-21
Publisher: Tetzlaff Verlag, Publication Date: Dec. 1998
Country of Publication: Germany CODEN: SIGDAN ISSN: 0037-4997
SICI: 0037-4997(199812)90:12L.19:FLC;1-5
Material Identity Number: S092-1999-001 Language: German
Document Type: Journal Paper (JP) Treatment: Applications (A); Practical(P)
Abstract: The Deutsche Bahn (DB AG) has decided to reorganize most of the

minor tracks into a radio based operation (FFB) within the next few years. A cost reduction in the infrastructure shall lead to a considerable cost reduction. With FFB, all functions of the interlocking installation are delegated to the vehicle, the track elements and the FFB-switchboard. An interlocking installation no longer exists. But such a system is only able to function if all components work together according to the necessary safety requests. The necessary method of communication is provided by a radio network (GSM-R) making use of a cryptographic way of protecting stored data. The level crossing as well as the switch are track elements within the FFB. In this paper some problems, looked upon from the FFB-level crossings point of view, are considered and ways of their solution are pointed out.

Subfile: B C

Descriptors: cryptography; mobile radio; rail traffic; railways; signalling; telecontrol; traffic control; traffic engineering computing

Identifiers: rail traffic control; level crossing operation; radio-based railway operation; safety; Germany; remote control; data encryption

Class Codes: B8520 (Transportation); B6120D (Cryptography); B6210J (Telemetry); B6250F (Mobile radio systems); C3360D (Rail-traffic system control); C7445 (Traffic engineering computing); C7420 (Control engineering computing); C3370L (Control applications in remote signalling, dispatching and safety devices); C3250 (Telecontrol and telemetering components); C6130S (Data security)

DIALOG(R)File 4:INSPEC

6127245 INSPEC Abstract Number: B1999-02-8520-031, C1999-02-3360D-005

Title: Intermediate block signalling (IBS). A cost effective method to increase throughput of railways

Author(s): Goundan, P.R.; Jhunjhunwala, A.

Author Affiliation: Dept. of Electr. Eng., Indian Inst. of Technol., Madras, India

Conference Title: VTC '98. 48th IEEE Vehicular Technology Conference. Pathway to a Global Wireless Revolution (Cat. No.98CH36151) Part vol.3 p.2090-4 vol.3

Publisher: IEEE, New York, NY, USA

Publication Date: 1998 Country of Publication: USA 3 vol. (xlviii+xliv+2598) pp.

ISBN: 0 7803 4320 4 Material Identity Number: XX-1998-01713

U.S. Copyright Clearance Center Code: 0 7803 4320 4/98/$10.00

Conference Title: VTC '98. 48th IEEE Vehicular Technology Conference. Pathway to a Global Wireless Revolution

Conference Sponsor: IEEE Vehicular Technol. Soc.; IEEE Canada; IEEE Ottawa Sect

Conference Date: 18-21 May 1998 Conference Location: Ottawa, Ont., Canada

Language: English Document Type: Conference Paper (PA)

Treatment: Applications (A); Practical (P)

Abstract: Indian Railways (IR) is under increasing pressure on existing routes to handle larger passenger and goods traffic, which is growing at the rate of 10% per annum. Some of the busy sections are reaching their

capacity limit. Conventional methods for enhancing the capacity of railways is by adding additional lines. Similarly by adding stations and shortening the inter-station distance, it is possible to increase the number of trains on the same line. However both these are expensive options. Intermediate block signalling (IBS) is a technique by which a block section between two adjoining stations is split into two by the provision of an additional signal which is remotely controlled from the station. The effect of such a signalling arrangement is the same as providing additional manned stations and increases the number of trains that can be passed on a line. The objective of this paper is to examine the signalling arrangement in IBS, its effect on line capacity and its design aspects to ensure safety of train operation. Theoretically predicted capacity increase is compared with actual increase achieved on a sample section 126 km route. (4 Refs)

Subfile: B C

Descriptors: rail traffic; railways; signalling; telecontrol; traffic control

Identifiers: intermediate block signalling; railway throughput improvement; India; rail traffic control; capacity enhancement; remote control; signalling arrangement; 126 km

Class Codes: B8520 (Transportation); B6210J (Telemetry); C3360D (Rail-traffic system control); C3370L (Control applications in remote signalling, dispatching and safety devices); C3250 (Telecontrol and telemetering components)

Numerical Indexing: distance 1.26E+05 m

DIALOG(R)File 4:INSPEC

5651664 INSPEC Abstract Number: B9709-6330-007, C9709-3360D-012

Title: The possibility of applying satellite navigation for shunting locomotive control

Author(s): Tos, Z.; Kavran, Z.; Kovacevic, D.

Conference Title: Proceedings. 16th Conference on Transportation Systems. Automation in Transportation '96 p.151-4

Editor(s): Sakie, Z.

Publisher: KoREMA, Zagreb, Croatia

Publication Date: 1996 Country of Publication: Croatia 171 pp.

Material Identity Number: XX97-01602

Conference Title: 16th Conference on Transportation Systems. Automation in Transportation '96

Conference Sponsor: Ministr. Sci. & Technol.; Ministr. Maritime Affairs, Transport & Commun.; Minstr. Economics; et al

Conference Date: 27-29 Nov. 1996 Conference Location: Split, Croatia

Language: Croatian Document Type: Conference Paper (PA)

Treatment: Applications (A)

Abstract: This paper deals with the safety of remote radio control applied to shunting locomotives. Great danger arises if the locomotive is unable to stop at a determined place at a fixed moment. In order to avoid such occurrences the exact position of the locomotive must be established and added to the remote control data. The locomotive's accurate position data can be obtained from the global positioning system (GPS). For

communication between the locomotive and the central unit the existing radio communication system can be used. If data from the geographical information system (GIS) concerning the position of the railway tracks as well as those concerning the order of the wagons are added an intelligent control system will be formed that fulfils the necessary requirements of security. (4 Refs)

Subfile: B C

Descriptors: geographic information systems; Global Positioning System; intelligent control; locomotives; rail traffic; telecontrol; traffic control

Identifiers: satellite navigation; shunting locomotive control; remote radio control; global positioning system; geographical information system; intelligent control system

Class Codes: B6330 (Radionavigation and direction finding); B6250G (Satellite relay systems); B6210J (Telemetry); C3360D (Rail-traffic system control); C3250 (Telecontrol and telemetering components); C6160S (Spatial and pictorial databases); C3370L (Control applications in remote signalling, dispatching and safety devices); C7420 (Control engineering computing); C7445 (Traffic engineering computing)

DIALOG(R)File 4:INSPEC

5622657 INSPEC Abstract Number: B9708-8520-034, C9708-3360D-010

Title: An X.25 packet data network for railroad signal supervisory control

Author(s): Haluza, D.

Author Affiliation: MTA Long Island Rail Road, Jamaica, NY, USA

Conference Title: Proceedings of the 1997 IEEE/ASME Joint Railroad Conference (Cat. No.97CH36047) p.165-92

Editor(s): Hong, J.; Stone, D. Publisher: IEEE, New York, NY, USA

Publication Date: 1997 Country of Publication: USA viii+274 pp.

ISBN: 0 7803 3854 5 Material Identity Number: XX97-00755

U.S. Copyright Clearance Center Code: 0 7803 3854 5/97/$10.00

Conference Title: Proceedings of the 1997 IEEE/ASME Joint Railroad Conference Conference Sponsor: Vehicular Technol. Soc.; Land Transp. Div.; IEEE; Rail Transp. Div.; ASME

Conference Date: 18-20 March 1997 Conference Location: Boston, MA, USA

Language: English Document Type: Conference Paper (PA)

Treatment: Applications (A); Practical (P)

Abstract: Supervisory control for the remote operation of railroad signal systems traditionally relied upon point-to-point communications circuits. The example presented here describes an X.25 packet data network constructed for the remote control of several new railroad interlockings on the MTA Long Island Rail Road, USA. The X.25 network uses commercial off-the-shelf equipment to provide redundant communications with automatic rerouting. This supervisory control system employs a high level of path diversity for maximum reliability. The network topology is a mesh consisting of two interconnected rings. Communication between sites is via digital transmission at 56 kb/s. Each site has two redundant nodal processors connected to two redundant programmable logic controllers. This paper describes the process leading up to the final implementation and the service history to date. It also provides background information on

communications networks and the OSI Reference Model, operating experience with existing signal supervisory systems on the LIRR, future implementation plans and an extensive glossary. (14 Refs)

Subfile: B C

Descriptors: open systems; packet radio networks; programmable controllers; rail traffic; railways; redundancy; signalling; telecontrol; traffic control; traffic engineering computing

Identifiers: railroad signal supervisory control; X.25 packet data network; remote operation; railroad interlockings; USA; redundant communications; automatic rerouting; supervisory control system; digital transmission; redundant programmable logic controllers; OSI Reference Model ; operating experience; signal supervisory systems; 56 kbit/s

Class Codes: B8520 (Transportation); B6210J (Telemetry); B6250 (Radio links and equipment); B6210L (Computer communications); C3360D (Rail-traffic system control); C3370L (Control applications in remote signalling, dispatching and safety devices); C3250 (Telecontrol and telemetering components); C3220B (Programmable controllers); C5620 (Computer networks and techniques); C7445 (Traffic engineering computing); C7420 (Control engineering computing)

Numerical Indexing: bit rate 5.6E+04 bit/s

DIALOG(R)File 4:INSPEC

5552779 INSPEC Abstract Number: B9705-8520-050, C9705-3360D-007

Title: High performance multisystem locomotive E412 for the Italian state railways

Author(s): Morisi, L.; Sezenna, F.; Mantica, L.; Oberti, M.

Author Affiliation: ABB Tecnomasio, Italy

Conference Title: EPE '95. 6th European Conference on Power Electronics and Applications Part v.2 p.66-71 vol.2 Publisher: EPE Assoc, Brussels, Belgium Publication Date: 1995 Country of Publication: Belgium 4 vol. (xxxii+42+xxxiv+948+xxx+928+1032) pp. Material Identity Number: XX97-00673

Conference Title: Proceedings of European Conference on Power Electronics and Applications Conference Sponsor: Eur. Power Electron. & Drives Assoc

Conference Date: 19-21 Sept. 1995 Conference Location: Seville, Spain

Language: English Document Type: Conference Paper (PA)

Treatment: Practical (P)

Abstract: For the strengthening of the railway service on the Italy-Austria Germany connection, FS ordered, at the end of 1993, 20 units of a new multi-voltage locomotive, called Class E412. The locomotive having a full adhesion and a mass of 87 tons, is able to develop a continuous power at wheels of 6000 kV, upto a speed of 200 km/h. The double star asynchronous motors are supplied at variable frequency and voltage by means of an oilcooled GTO converter that allows service below 3 kV DC lines and under 15 kV 16 2/3 Hz lines. Service is also assured at reduced performance under a 1.5 kV DC line. During the DC operation, the main transformer assures also the function of line filter. In AC service the transformer supplies a double-stage converter. In DC service, all the converter modules operate as inverters and each of them separately supplies one of the motor stars. This solution consents the maximum reduction of weight, though using single axle drive. The regeneration and/or rheostatic electric braking is able to work in DC and AC service. The control electronics, based on the MICAS S2 series, is an integrated and uniform system. Transmission of all machine signals on a redundant fibre-

optics bus helps to reduce harness to a minimum and ensures noise-free operation. The locomotive is equipped with several diagnostic and remote control systems. (5 Refs) Subfile: B C

Descriptors: electric locomotives; induction motor drives; invertors; machine control; regenerative braking; telecontrol; thyristor convertors; thyristor motor drives; traction motor drives; transport control

Identifiers: Class E412 multi-voltage locomotive; full adhesion; double star asynchronous motors; variable frequency; variable voltage; oil-cooled GTO converter; transformer; line filter; double-stage converter; inverters; single axle drive; rheostatic electric braking; regenerative braking; control electronics; MICAS S2 series; redundant fibre-optics bus; noise-free operation; remote control system; diagnostic systems; 1.5 kV; 3 kV; 15 kV; 6000 kW; 16.67 Hz; 87 tonne

Class Codes: B8520 (Transportation); B8510 (Drives); B8310E (Asynchronous machines); B8360 (Power convertors and power supplies to apparatus); C3360D (Rail-traffic system control); C3340H (Control of electric power systems); C3250 (Telecontrol and telemetering components)

Numerical Indexing: voltage 1.5E+03 V; voltage 3.0E+03 V; voltage 1.5E+04 V; power 6.0E+06 W; frequency 1.667E+01 Hz; mass 8.7E+04 kg

DIALOG(R)File 4:INSPEC

4552457 INSPEC Abstract Number: B9401-6210-062

Title: The telecommunications network on the high-speed Madrid-Seville line

Author(s): Hermida San Martin, F.A.; Malner, R.

Author Affiliation: Av. Cuidad de Barcelona, Madrid, Spain

Journal: Signal und Draht vol.85, no.6 p.213-17

Publication Date: June 1993 Country of Publication: West Germany

CODEN: SIGDAN ISSN: 0037-4997 Language: German

Document Type: Journal Paper (JP) Treatment: Applications (A); Practical(P)

Abstract: The high-speed line on Spanish state railways (RENFE) linking Madrid and Seville has been equipped with a digital network using 28 Hicom 300 communication systems. The installations are meshed via optical fibre cables and ensure a maximum of reliability thanks to a cleverly devised routing system. All the services required on the line are connected via the Hicom network: hot-box detectors, traction power system monitoring, linear ATC system, signalling equipment, train radio and the line telephone system. This enables all operational functions to be remotely controlled from the operations control centre; should it prove necessary, decentralised operation is also possible from the stations with electronic interlocking systems. (0 Refs) Subfile: B

Descriptors: digital communication systems; optical cables; optical links ; radio systems; railways; telecommunication networks

Identifiers: Hicom network; remote control; telecommunications network; high-speed Madrid-Seville line; high-speed line; Spanish state railways; RENFE; Madrid; Seville; digital network; Hicom 300 communication systems; optical fibre cables; reliability; routing system; hot-box detectors; traction power system monitoring; linear ATC system; signalling equipment; train radio; line telephone system; operations control centre; decentralised operation; electronic interlocking systems

Class Codes: B6210 (Telecommunication applications); B8520 (Transportation); B6260 (Optical links and equipment); B6250 (Radio links and equipment)

DIALOG(R)File 4:INSPEC

4523407 INSPEC Abstract Number: B9312-6250F-088, C9312-3360D-018
Title: The first private radio link network enters service with Eisenbahn und Hafen GmbH, Duisburg
Author(s): Fischer, W. Journal: Signal und Draht vol.85, no.9 p.300-3
Publication Date: Sept. 1993 Country of Publication: West Germany
CODEN: SIGDAN ISSN: 0037-4997 Language: German
Document Type: Journal Paper (JP) Treatment: Applications (A); Practical(P)
Abstract: A highly rationalised, radio-remote-controlled railway system in which control operations an be executed centrally in the event of total signal box failure calls for a full-scale, reliable communication system. The author's company has opted for a radio link system that reliably transmits shunting instructions and forwards operational reports. The new communication system plays its part in reducing the cost of centralising and distributing freight. (0 Refs) Subfile: B C
Descriptors: radio links; railways; telecontrol
Identifiers: freight distribution; private radio link network; radio-remote-controlled railway system; shunting instructions; operational reports
Class Codes: B6250F (Mobile radio systems); C3360D (Rail-traffic systems) ; C3370L (Remote signalling, dispatching and safety devices)

DIALOG(R)File 4:INSPEC

4445626 INSPEC Abstract Number: B9308-8520-040, C9308-7410H-039
Title: New-generation FuBR 90 radio control for brake test devices
Author(s): Weinberger, A.; Karl, W.
Journal: Signal und Draht vol.85, no.1-2 p.28-32
Publication Date: Jan.-Feb. 1993 Country of Publication: West Germany
CODEN: SIGDAN ISSN: 0037-4997 Language: German
Document Type: Journal Paper (JP) Treatment: Practical (P)
Abstract: The FuBR 90 radio remote control system for brake testing systems offers the possibility of radio remote control of Knorr STK 6350 break test devices via a Teleport 9 portable voice/data transmitter (radio command set). Transmission of remote control data between Teleport 9 control sets and up to 64 brake test devices is securely effects via data telegrams using a data radio channel. (3 Refs) Subfile: B C
Descriptors: braking; radio systems; rail traffic; railways; telecontrol; test equipment; testing
Identifiers: railways; rail traffic control; telecontrol; FuBR 90; remote control; brake testing; Knorr STK 6350; Teleport 9 portable voice/data transmitter; data telegrams; data radio channel
Class Codes: B8520 (Transportation); B6250 (Radio links and equipment); B6210J (Telemetry); B7210B (Automatic test and measurement systems); C7410H (Instrumentation); C7490 (Other engineering fields); C3250 (Telecontrol and telemetering components)

DIALOG(R)File 4:INSPEC

04147371 INSPEC Abstract Number: B9206-8520-037
Title: Electrical equipment of the Austrian Railways' dual system electric locomotive Series 1822
Author(s): Jahn, P.
Journal: Elektrotechnik und Informationstechnik vol.109, no.2 p. 76-80
Publication Date: 1992 Country of Publication: Austria
CODEN: EIEIEE ISSN: 0932-383X Language: German
Document Type: Journal Paper (JP) Treatment: Practical (P)
Abstract: The author describes an electric locomotive which can be powered either from 15 kV power supplies at 16 1/3 Hz or from 2 kV to 4.2 kV DC supplies when the engine is used on the Italian DC system. In the 16 2/3 Hz supply mode the AC is transformed down and rectified. The DC is inverted in GTO (gate turnoff) thyristors to produce a maximum frequency of 148 Hz, and a nominal frequency of 66 Hz to drive three-phase induction motors. Remote control is described, so that two engines can be controlled, one at each end of a train. The dual system engines are to enter service on the Brenner railway between Austria and Italy mid-1992. (0 Refs) Subfile: B
Descriptors: electric locomotives; induction motors; invertors; power supplies to apparatus; power transformers; railways; rectifiers; telecontrol; thyristor applications
Identifiers: Austria; Italy; rectifiers; power transformers; invertors; thyristor applications; telecontrol; electric locomotive; Series 1822; power supplies; GTO; three-phase induction motors; 15 kV; 2 to 4.2 kV; 66 Hz; 16.33 Hz; 16.66 Hz; 148 Hz
Class Codes: B8520 (Transportation); B8360 (Power convertors and power supplies to apparatus); B8350 (Transformers and reactors); B8310E (Asynchronous machines)
Numerical Indexing: voltage 1.5E+04 V; voltage 2.0E+03 to 4.2E+03 V; frequency 6.6E+01 Hz; frequency 1.633E+01 Hz; frequency 1.666E+01 Hz; frequency 1.48E+02 Hz

DIALOG(R)File 4:INSPEC

03862485 INSPEC Abstract Number: C91027541
Title: Radio remote control of the hump locomotives at the Munich (North) marshalling yard
Author(s): Grolms, R.; Schmidt, M.
Journal: Signal und Draht vol.82, no.12 p.231-5
Publication Date: 1990 Country of Publication: West Germany
CODEN: SIGDAN ISSN: 0037-4997 Language: German
Document Type: Journal Paper (JP) Treatment: Applications (A)
Abstract: A radio remote control system for the locomotive has been incorporated in the hump control system, permitting a uniform mode of operation for the two functions. This has made for a marked reduction in training requirements, maintenance and spare parts stockage. The new set-up has also made the remote hump locomotive control system more reliable.(2 Refs)
Subfile: C
Descriptors: maintenance engineering; mobile radio systems; railways; telecontrol
Identifiers: hump locomotives; marshalling yard; radio remote control

system; training requirements; maintenance; spare parts
Class Codes: C3360D (Rail-traffic systems); C3370H (Radio and radar); C3370L (Remote signalling, dispatching and safety devices); C3250 (Telecontrol and telemetering components)

DIALOG(R)File 4:INSPEC

03851590 INSPEC Abstract Number: B91027238, C91021211
Title: Plan of digital microwave radio communication network in Kyushu area
Author(s): Yuge, T.; Ohashi, R.; Fujisawa, S.
Journal: Railway & Electrical Engineering vol.1, no.3 p.45-9
Publication Date: 1990 Country of Publication: Japan ISSN: 0915-9231
Language: Japanese Document Type: Journal Paper (JP)
Treatment: Practical (P)
Abstract: Nippon Telecom Company has been constructing networks along the Shinkansen Line, providing fiber-optic transmission cables and other high cost-performance cables. The company also plans to improve network reliability by applying multi-route transmission cables to form ladder-type or loop-type networks. A digital microwave radio communication system has been adopted to construct the quick and stable transmission cables in the Kyushu area. The '5G-200ME' radio communication system is composed of the transmitter and receiver, modulator and demodulator, and line switching system. The supervisory control system is composed of the remote supervisory controller, line switching controller, system connector, system supervisory controller and console control unit. (0 Refs)
Subfile: B C
Descriptors: digital radio systems; microwave links; radio equipment; railways; traffic control
Identifiers: ladder-type networks; digital microwave radio communication network; Kyushu area; Shinkansen Line; fiber-optic transmission cables; loop-type networks; transmitter; receiver; modulator; demodulator; line switching system; supervisory control system; remote supervisory controller ; line switching controller; system connector; system supervisory controller; console control unit
Class Codes: B6250 (Radio links and equipment); B8520 (Transportation); C3360D (Rail-traffic systems)

DIALOG(R)File 4:INSPEC

03807983 INSPEC Abstract Number: B91014969, C91008810
Title: Remote control light rail motor tractors introduced in service
Author(s): Boutonnet, J.C.; Bourda, A.
Journal: Revue General des Chemins de Fer vol.109, no.10 p.23-8
Publication Date: Oct. 1990 Country of Publication: France
CODEN: RGCFAI ISSN: 0035-3183
U.S. Copyright Clearance Center Code: 0035-3183/90/102306/$2.60
Language: French Document Type: Journal Paper (JP)
Treatment: Practical (P)
Abstract: SNCF introduced light rail motor tractors remotely controlled from portable consoles via a 446 MHz frequency radio link with each motor

tractor. Some ten motor tractors can be remotely controlled simultaneously on the same site independently from each other and on a time-sharing basis. The system simplifies the organisation of the work for stations in the many shunting operations they must handle. 90 light rail motor tractors are being built and 30 have already been delivered. Further orders will be placed and an additional 60 ordinary rail motor tractors will be modified and fitted with this equipment. (0 Refs)

Subfile: B C

Descriptors: diesel-electric locomotives; mobile radio systems; radio applications; radio links; telecontrol; transport computer control

Identifiers: VHF; light rail motor tractors; portable consoles; radio link; shunting operations; 446 MHz

Class Codes: B8520 (Transportation); B6250F (Mobile radio systems); B6210J (Telemetry); C3360D (Rail-traffic systems); C7420 (Control engineering); C3250 (Telecontrol and telemetering components)

Numerical Indexing: frequency 4.46E+08 Hz

DIALOG(R)File 4:INSPEC

03797837 INSPEC Abstract Number: C91008808

Title: New mechanism to check brake operation on freight trains in marshalling yards

Author(s): Bernheim, A.; Bodet, J.; Sevrin, B.

Journal: Revue General des Chemins de Fer vol.109, no.9 p.21-30

Publication Date: Sept. 1990 Country of Publication: France

CODEN: RGCFAI ISSN: 0035-3183

Language: French Document Type: Journal Paper (JP)

Treatment: Practical (P)

Abstract: The SNCF has improved the performance levels of its wagon forwarding system. In order to make the best use of its new rolling stock, the technical monitoring system has been altered and a new mechanism introduced for checking brake operation on freight trains in marshalling yards. Freight train operating conditions out on the line are created when trains are prepared in marshalling yards equipped with inspection facilities. Two types of test equipment are used, a remote control air system and a remote control radio system. (0 Refs)

Subfile: C

Descriptors: brakes; railways; telecontrol; test equipment

Identifiers: brake operation; freight trains; marshalling yards; SNCF; wagon forwarding system; rolling stock; remote control air system; remote control radio system

Class Codes: C3360D (Rail-traffic systems); C3250 (Telecontrol and telemetering components)

DIALOG(R)File 4:INSPEC

03779881 INSPEC Abstract Number: B91007242, C91002107
Title: SOCRATE-on-board information system
Author(s): Cassani, E.; Serra, R.; Silvestri, S.
Journal: Elettrotecnica vol.77, no.6 p.523-32
Publication Date: June 1990 Country of Publication: Italy
CODEN: ETRTAF ISSN: 0013-6131 Language: Italian
Document Type: Journal Paper (JP) Treatment: Practical (P)
Abstract: The prototype of the ETR500 high speed train designed by Italian Railways has been in service for over a year. It consists of a leading coach, a second remotely controlled coach and 12 carriages. The SOCRATE system enables the train driver to remotely control all the train systems, the train staff to supervise the equipment, and the traffic control centre to receive diagnostic data. At the depot, SOCRATE accelerates the maintenance and inspection of individual coaches and carriages and made-up trains, and supplies data for the automated management of replacements, resources and programmed overhauls. Particular attention has been given to ensuring high standards of reliability in the architecture, components and software of the system.
Subfile: B C
Descriptors: electric locomotives; maintenance engineering; rail traffic; telecontrol; traffic computer control
Identifiers: train system remote control; on-board information system; ETR500 high speed train; Italian Railways; SOCRATE; traffic control centre; diagnostic data; maintenance; inspection; coaches; carriages; programmed overhauls; reliability
Class Codes: B8520 (Transportation); B0160 (Plant engineering, maintenance and safety); C3360D (Rail-traffic systems); C7420 (Control engineering)

DIALOG(R)File 4:INSPEC

03709573 INSPEC Abstract Number: B90067675
Title: Electric traction on the lines of the Soviet Railways (SZD)
Author(s): Kotelnikow, A.W.
Journal: Elektrische Bahnen vol.88, no.4 p.181-6
Publication Date: April 1990 Country of Publication: West Germany
CODEN: ELBAAQ ISSN: 0013-5437 Language: German
Document Type: Journal Paper (JP) Treatment: Practical (P)
Abstract: At present, the electric network of the SZD is 35% of the total network. 62% of the trains are hauled electrically. The specific energy consumption has been reduced to 10 until 12 Wh/tkm is achieved due to the electrification. By 1990 a further 8000 km will be electrified. For electric traction two systems, 25 kV AC and 3 kV AC, are being utilized. Autotransformer feeding is increasingly used on the 25 kV lines. A description is given of the energy supply and the overhead contact system. All installations of electric traction are regulated by remote control technique. The latest electric locomotive classes have been constructed with three-phase drive technology. (0 Refs)
Subfile: B
Descriptors: electric drives; electric locomotives; railways; traction
Identifiers: autotransformer feeding; 3-phase drives; Soviet Railways; SZD;

specific energy consumption; electric traction; energy supply; overhead contact system; remote control; electric locomotive classes; 25 kV ; 3 kV
Class Codes: B8520 (Transportation)
Numerical Indexing: voltage 2.5E+04 V; voltage 3.0E+03 V

DIALOG(R)File 4:INSPEC

03557823 INSPEC Abstract Number: C90017422
Title: Software systems: design for maintenance railway applications
Author(s): Mulvey, D.; Walton, P.N.
Author Affiliation: Logica, London, UK
Conference Title: International Conference on Main Line Railway Electrification (Conf. Publ. no.312) p.202-6
Publisher: IEE, London, UK
Publication Date: 1989 Country of Publication: UK xiv+428 pp.
Conference Date: 25-28 Sept. 1989 Conference Location: York, UK
Language: English Document Type: Conference Paper (PA)
Treatment: General, Review (G)
Abstract: From the earliest days of computing, railways have made use of management information systems based on software. With the recent rapid growth of microprocessor applications, however, software has spread into areas previously untouched. Remote control systems and signalling applications such as track circuits and interlockings have all become microprocessor based. Even locomotives now contain software. This trend means that it is becoming increasingly important for railways to be able to control the development and application of software including the incorporation of changes. Here, the authors present a brief review of a number of emerging techniques which promise to make the task of software maintenance easier, and more productive. (15 Refs)
Subfile: C
Descriptors: railways; software engineering
Identifiers: maintenance; railway applications; railways; software; microprocessor; signalling; locomotives; development
Class Codes: C7490 (Other engineering fields); C6110B (Software engineering techniques)

DIALOG(R)File 4:INSPEC

03557822 INSPEC Abstract Number: B90013281, C90016959
Title: Tangara train management system-concept, design and experience
Author(s): Bruce, R.; Hatton, T.
Conference Title: International Conference on Main Line Railway Electrification (Conf. Publ. no.312) p.197-201
Publisher: IEE, London, UK
Publication Date: 1989 Country of Publication: UK xiv+428 pp.
Conference Date: 25-28 Sept. 1989 Conference Location: York, UK
Language: English Document Type: Conference Paper (PA)
Treatment: General, Review (G)
Abstract: Tangara, an aboriginal word meaning 'to go', is the name chosen for Sydney's new mainline double deck commuter train. During the conceptual

design stage it was realised that to reduce operational delays caused by train faults and decrease maintenance/repair time an intelligent means of fault handling and recording was required. This need gave rise to the Tangara train management system (TMS) which although being similar in concept to other systems being installed on modern locomotives and rolling-stock, is unique and specific in design to Tangara. Three basic functions are performed by the train management system: equipment monitoring; fault annunciation; and remote control. Each function, in turn, is examined by the authors. (0 Refs)

Subfile: B C

Descriptors: computerised monitoring; electric locomotives; railways

Identifiers: Australia; maintenance; train management system; commuter train; design; faults; locomotives; equipment monitoring; remote control

Class Codes: B8520 (Transportation); B7210B (Automatic test and measurement systems); C7410H (Instrumentation); C7420 (Control engineering); C7490 (Other engineering fields)

DIALOG(R)File 4:INSPEC

03303835 INSPEC Abstract Number: B89010906, C89012429

Title: Radio remote-controlled humping locos-signalling elements

Author(s): Schmidt, M.; Schurmans, P.

Author Affiliation: BZA Munchen, West Germany

Journal: Signal und Draht vol.80, no.9 p.205-7

Publication Date: Sept. 1988 Country of Publication: West Germany

CODEN: SIGDAN ISSN: 0037-4997

Language: German Document Type: Journal Paper (JP)

Treatment: Practical (P)

Abstract: A quite considerable increase in hump yard performance can be achieved with the radio-controlled humping loco in conjunction with variable humping speed. Attainment of the maximum hourly yard performance with consistently high work quality requires the train to be humped to the run in a direct link with the humping control computer. For existing and future marshalling yards a future-oriented concept has been drawn up for radio remote control of humping locos using the latest technologies. The authors describe the techniques used for the interface with the operator, the signal box, the humping control computer and the humping loco. (0 Refs)

Subfile: B C

Descriptors: locomotives; radio links; signalling; telecommunications computer control; telecontrol

Identifiers: remote-controlled humping locos; signalling; radio-controlled humping loco; humping control computer; interface; signal box

Class Codes: B6210J (Telemetry); B6250 (Radio links and equipment); C3370L (Remote signalling, dispatching and safety devices); C7420 (Control engineering); C3360D (Rail-traffic systems)

DIALOG(R)File 4:INSPEC

03236885 INSPEC Abstract Number: B88066930, C88056350
Title: ATCS-a new generation in North American signalling techniques
Author(s): Dobler, K.-U.
Author Affiliation: SEL Canada, Don Mills, Ont., Canada
Journal: Signal und Draht vol.80, no.6 p.127-8, 130-2
Publication Date: June 1988 Country of Publication: West Germany
CODEN: SIGDAN ISSN: 0037-4997
Language: German Document Type: Journal Paper (JP)
Treatment: Practical (P)
Abstract: Under the auspices of the AAR the major US and Canadian railway companies have defined the specifications for a new operations control system and initiated its development and trials. The principal components of the ATCS (advanced train control system) are: data radio links to all locos on the lines fitted out for ATCS, computers in the cabs, radio remote control of track installations such as switches, a location system with transponders and a central computer system that is also able to execute safety-relevant functions. The ATCS can be built up in several independently usable stages. The functions that can be implemented range from level 10 with computer assistance of operating staff for verbal route-clear commands to level 40 with automatic route selection, cab signalling and direction control of train runs with a view to optimum energy utilisation. The technical and operational requirements to be met by the system have already been laid down; component trials are currently under way. (0 Refs)
Subfile: B C
Descriptors: radio links; railways; signalling (telecommunication networks); telecontrol; transport computer control
Identifiers: US railway companies; North American signalling techniques; Canadian railway companies; operations control system; advanced train control system; data radio links; radio remote control; track installations ; switches; location system; transponders; central computer system; safety-relevant functions; operating staff; verbal route-clear commands; automatic route selection; cab signalling; optimum energy utilisation
Class Codes: B6210J (Telemetry); B6250 (Radio links and equipment); C3250 (Telecontrol and telemetering components); C3360D (Rail-traffic systems); C3370L (Remote signalling, dispatching and safety devices); C7420 (Control engineering)

DIALOG(R)File 4:INSPEC

02755113 INSPEC Abstract Number: B86066408
Title: External test power supply for Shinkansen system-100 electric railcars
Author(s): Higashi, H.
Journal: Electric Lighting & Facilities in Railways vol.35, no.11 p.23-5
Publication Date: 1985 Country of Publication: Japan
CODEN: DETTAB ISSN: 0417-0296 Language: Japanese
Document Type: Journal Paper (JP) Treatment: Practical (P)
Abstract: System-100 electric railcars remodeled and newly introduced as the super express cars on the new Tokaido/Sanyo line are characterized by

the followings: improvement of ride comfort including a spot air-conditioning system and spot lamps for reading, installation of the passenger guide information system and introduction of simultaneous radio broadcasting relay service, etc. The first two cars and a couple of two-storied cars are designed as the trailers without motors to save manufacturing cost. A remote supervisory control system to monitor and control the major devices for each car from the operator's desk and the automatic announcement system are introduced and the number of pantographs is reduced for labor saving and maintenance cost reduction. The author describes the external test power supply (AC 440 V, 60 Hz) for Shinkansen System-100 electric railcars. (0 Refs)

Subfile: B

Descriptors: electric vehicles; power supplies to apparatus; railways

Identifiers: Shinkansen system-100 electric railcars; spot air-conditioning; spot lamps; passenger guide information system; simultaneous radio broadcasting relay service; trailers; remote supervisory control system; automatic announcement system; external test power supply; AC 440 V; 60 Hz

Class Codes: B8360 (Power convertors and power supplies to apparatus); B8520 (Transportation)

DIALOG(R)File 4:INSPEC

02726577 INSPEC Abstract Number: B86055219

Title: Train radio in Brazil

Author(s): Pecina, H.

Journal: Signal und Draht vol.78, no.1-2 p.36-41

Publication Date: Jan.-Feb. 1986 Country of Publication: West Germany

CODEN: SIGDAN ISSN: 0037-4997 Language: German

Document Type: Journal Paper (JP) Treatment: General, Review (G)

Abstract: Brazilian cities such as Rio de Janeiro and Sao Paulo require efficient means of transport-as a means of mass transport the railways are the most suitable; in order to ensure smooth operation and rapid action in the event of breakdown or accident, the railways make wide-ranging use of radio technology for control tasks. The size of the country and the virtual absence of existing infrastructure such as cables laid along the lines necessitates a network layout that differs greatly from German railway network. The use of directional radio as the backbone of radio links, with individual connection of each line relay station to the central radio station, the use of five-tone systems for selective calls to individual trains, and the use of remote control to aid general monitoring of the operational condition of the radio stations-these are features of a variety of train radio networks that enable individual adaptation to prevailing conditions. The author describes four different approaches to train radio networks in Brazil, exemplified by the Brazilian State Railways (RFFSA) networks in the Rio de Janeiro and Sao Paulo areas, the Sao Paulo underground and the approximately 1000 km long ore transport line from St. Luiz to Carajas. (0 Refs) Subfile: B

Descriptors: mobile radio systems; radio networks; railways

Identifiers: mobile radio systems; Brazil; Rio de Janeiro; Sao Paulo; railways; directional radio; radio links; line relay station; central radio station; five-tone systems; selective calls; remote control; monitoring; train radio networks; Brazilian State Railways; RFFSA

Class Codes: B6250F (Mobile radio systems)

DIALOG(R)File 4:INSPEC

02646739 INSPEC Abstract Number: B86033761, C86022822
Title: Class 1064 shunting locomotives of Austrian Federal Railways
Author(s): Graefen, A.
Author Affiliation: Transp. Syst. Div., Brown Boveri, Mannheim, West Germany
Journal: Brown Boveri Review vol.72, no.12 p.560-6
Publication Date: Dec. 1985 Country of Publication: Switzerland
CODEN: BRBOA9 ISSN: 0007-2486
Language: English Document Type: Journal Paper (JP)
Treatment: Practical (P)
Abstract: Austrian Federal Railways operate six heavy-duty shunting locomotives of class 1064 in the marshalling yard at Kledering near Vienna. The locomotives have two three-axle bogies and are equipped with three-phase drive systems from Brown Boveri for optimum transmission of the tractive effort. The electrical equipment is installed in the front and rear end sections, on either side of the driver's cab. Operation of the locomotives is largely automatic, with commands and signals handled by a stationary computer and a radio-operated remote control system. (5 Refs)
Subfile: B C
Descriptors: computerised control; electric drives; electric locomotives; railways; telecontrol; velocity control
Identifiers: class 1064 electric shunting locomotives; speed control; Brown Boveri Company; Austrian Federal Railways; three-axle bogies; three-phase drive systems; tractive effort; electrical equipment; stationary computer; radio-operated remote control system
Class Codes: B8510 (Drives); B8520 (Transportation); C3120E (Velocity, acceleration and rotation); C3340H (Electric systems); C3360D (Rail-traffic systems); C3370L (Remote signalling, dispatching and safety devices); C7420 (Control engineering)

DIALOG(R)File 4:INSPEC

02571043 INSPEC Abstract Number: B86004503, C86001776
Title: Control and monitoring via medium-frequency techniques and existing mine conductors
Author(s): Dobroski, H., Jr.; Stolarczyk, L.G.
Author Affiliation: US Bur. of Mines, Pittsburgh Res. Center, PA, USA
Journal: IEEE Transactions on Industry Applications vol.IA-21, no.4 p.1087-92
Publication Date: July-Aug. 1985 Country of Publication: USA
CODEN: ITIACR ISSN: 0093-9994
U.S. Copyright Clearance Center Code: 0093-9994/85/0700-1087$01.00
Language: English Document Type: Journal Paper (JP)
Treatment: Practical (P)
Abstract: Medium-frequency (MF) techniques have been successfully applied to the problem of radio voice communications in both coal and metal and nonmetal mines. Long range is achieved by taking advantage of existing mine conductors that carry and propagate the signal over vast areas. It is very likely that in the near future such systems will become the preferred method for general mine communications. MF techniques can also be applied to

the areas of in-mine control and monitoring. Preliminary work in this area is described. In a western mine, locomotives are being operated under MF remote control in a loading operation. In several eastern mines, MF has been evaluated as a method for monitoring the status of devices in remote areas of the mines. All control and monitor information uses existing mine conductors. (0 Refs)

Subfile: B C

Descriptors: mining; mobile radio systems; monitoring; telecontrol; telemetering; voice communication

Identifiers: medium-frequency techniques; mine conductors; radio voice communications; mine conductors; mine communications; MF remote control

Class Codes: B6210J (Telemetry); B6250F (Mobile radio systems); C3250 (Telecontrol and telemetering components); C3310E (Mining, oil and natural gas extraction and distribution); C3370L (Remote signalling, dispatching and safety devices)

DIALOG(R)File 4:INSPEC

02534835 INSPEC Abstract Number: B85060496, C85044947

Title: Radio remote control of industrial locomotives in the Federal Republic of Germany

Author(s): Zolle, G. Author Affiliation: Gemeinschaftsbetrieb Eisenbahn und Hafen, Duisburg-Hamborn, West Germany

Journal: Zeitschrift fur Eisenbahnwesen und Verkehrstechnik vol.109, no.2-3 p.122-30 Publication Date: Feb.-March 1985 Language: German

Country of Publication: West Germany CODEN: ZEVGAK ISSN: 0373-322X

Document Type: Journal Paper (JP) Treatment: Applications (A)

Abstract: In 1983, up to 63% of all locomotive service hours were handled using 67 locomotives already equipped for radio remote control. It is intended to increase the number of locomotive to 88 by 1987. Due to preventive maintenance the equipment features a very low failure rate.(5 Refs)

Subfile: B C

Descriptors: industrial plants; locomotives; maintenance engineering; mobile radio systems; telecontrol

Identifiers: West Germany; industrial locomotives; locomotive service hours; radio remote control; preventive maintenance

Class Codes: B6250F (Mobile radio systems); B8520 (Transportation); C3250 (Telecontrol and telemetering components); C3360D (Rail-traffic systems); C3370H (Radio and radar)

02508413 INSPEC Abstract Number: C85040679
Title: Planning of the operational control systems on the Swiss Federal Railways
Author(s): Winter, P. Journal: Rail International vol.16, no.3 p.91-6
Publication Date: March 1985 Country of Publication: Belgium
CODEN: RAIIAF ISSN: 0020-8442 Conference Title: IRCA/UIC Congress
Conference Date: 6-10 May 1985 Conference Location: Brussels, Belgium
Language: English Document Type: Conference Paper (PA); Journal Paper(JP)
Treatment: Practical (P)
Abstract: A newly developed plan for the whole system provides for a 2-stage organization for the future. Operational control stations at the headquarters of the three district managements look after the arrangements with system-wide effects; about 25 remote control centres in large nodal stations are responsible for detailed operational management in their area. The Zurich operational control centre is a priority project, which should be completed by the putting into service of the Zurich S-Bahn in the year 1990. A new train radio system is reckoned to be an important technical aid for the new operational control plan. This is modelled on the UIC-standard, but shows several amplifications such as simultaneous data transmission, telephone positions in operational and remote control centres, etc. (6 Refs)
Subfile: C
Descriptors: mobile radio systems; rail traffic; scheduling; telecontrol; traffic computer control
Identifiers: Swiss Federal Railways; plan; district managements; remote control centres; operational control centre; train radio system; simultaneous data transmission
Class Codes: C3360D (Rail-traffic systems); C7420 (Control engineering)

02258129 INSPEC Abstract Number: B84032699
Title: Radio communication. An economic service for single branch lines
Author(s): Schmehling, H.
Journal: Signal und Draht vol.76, no.1-2 p.3-11
Publication Date: Jan.-Feb. 1984 Country of Publication: West Germany
CODEN: SIGDAN ISSN: 0037-4997
Language: German Document Type: Journal Paper (JP)
Treatment: General, Review (G); Practical (P)
Abstract: A reinstallation of remote control facilities at stations on single railway lines is hardly economic, owing to the demand of investments. Even if the conventional remote-control is derefined the technical expense required for a secured transmission of commands and messages is still very high. In this contribution a technical solution is introduced by which less trafficked railway lines could be operated economically by means of train-to-wayside radio communication facilities and renunciation of stationary signal installations. (2 Refs) Subfile: B
Descriptors: mobile radio systems; radiocommunication; railways; signalling
Identifiers: radio communication; economic service; single branch lines; remote control facilities; single railway lines; train-to-wayside radio communication facilities; stationary signal installations
Class Codes: B6250F (Mobile radio systems); B8520 (Transportation)

DIALOG(R)File 4:INSPEC

02207040 INSPEC Abstract Number: B84016450, C84011999
Title: Fu BR 80 type-a novel radio remote-control facility for brake test plants
Author(s): Gunther, J.; Weinberger, K.
Author Affiliation: BZA Munchen, Munchen, West Germany
Journal: Signal und Draht vol.75, no.11 p.202-9
Publication Date: Nov. 1983 Country of Publication: West Germany
CODEN: SIGDAN ISSN: 0037-4997
Language: German Document Type: Journal Paper (JP)
Treatment: New Developments (N)
Abstract: A novel radio remote-control facility of the Fu BR 80 type to control brake test plants will be brought into action on the system of the German Federal Railway. With this installation the demand in radio frequencies will be reduced to a minimum by the application of modern microprocessor technology and the criteria of efficiency as well as the working will be considerably improved in comparison with the radio remote-control installations used so far. (3 Refs)
Subfile: B C
Descriptors: mobile radio systems; railways; telecontrol equipment
Identifiers: radio frequencies requirement reduction; mobile radio; Fu BR 80 type; radio remote-control facility; brake test plants; German Federal Railway; microprocessor technology; criteria of efficiency
Class Codes: B6210J (Telemetry); B6250F (Mobile radio systems); C3360D (Rail-traffic systems); C3370L (Remote signalling, dispatching and safety devices)

DIALOG(R)File 4:INSPEC

02111251 INSPEC Abstract Number: B83051248, C83033626
Title: Infrared wireless telecommunication system for a remotely controlled robot in nuclear power plants
Author(s): Tomizawa, F.; Ozaki, N.; Sato, C.
Author Affiliation: Energy Res. Lab., Hitachi Ltd., Ibaraki, Japan
Journal: Transactions of the American Nuclear Society v.44 p.576-7
Publication Date: 1983 Country of Publication: USA
CODEN: TANSAO ISSN: 0003-018X
Conference Title: 1983 Annual Meeting of the American Nuclear Society
Conference Date: 12-16 June 1983 Conference Location: Detroit, MI, USA
Language: English
Document Type: Conference Paper (PA); Journal Paper(JP)
Treatment: Practical (P)
Abstract: Telecommunication between a robot and an operator is one of the key technologies for a remotely controlled maintenance robot. The previously developed telecommunication systems between a locomotive vehicle and an operator in a distant control room were a transmission system that used a coaxial cable and a wireless transmission that used a leaky coaxial cable. Both systems have serious disadvantages in that unrestricted locomotion ability is not provided to the robot and/or that potential interference with plant control systems is possible. A new and more sophisticated data transmission system using infrared light is now proposed

for telecommunication between the remotely controlled robot and an operator. (1 Refs)

Subfile: B C

Descriptors: communications applications of control; data communication systems; maintenance engineering; optical links; robots; telecontrol

Identifiers: IR wireless telecommunications system; remotely controlled robot; nuclear power plants; maintenance robot; locomotive vehicle; operator; data transmission system

Class Codes: B6210Z (Other data transmission); B6260 (Optical links and equipment); C3370L (Remote signalling, dispatching and safety devices); C3390 (Robotics)

DIALOG(R)File 4:INSPEC

02090953 INSPEC Abstract Number: C83029658

Title: Ansaldo teleoperation systems

Journal: Automazione e Strumentazione vol.31, no.4 p.144-52
Publication Date: April 1983 Country of Publication: Italy
CODEN: ATSZAS ISSN: 0005-1284
Language: Italian Document Type: Journal Paper (JP)
Treatment: Practical (P)

Abstract: The increasing need for security in organisations such as electrical networks, railways, etc. causes more reliance to be placed on the availability and reliability of information equipment. The telegraphic approach was first used but developments in telecommunications such as telephone lines, radio and other wave type communications have enabled important advances to be made. The paper gives some details of Ansaldo systems. These include equipment working over ENEL lines, such as minicomputers and microprocessors. A number of photographs of such equipment are given. Some details are included regarding the performance characteristics of the equipment described. The use of train describers is explained, with a number of photographs of this type of equipment and details of typical spacings used. (0 Refs)

Subfile: C

Descriptors: computerised control; control systems; rail traffic; telecontrol equipment

Identifiers: wave communications; telecontrol; remote control; teleoperation; security; electrical networks; railways; availability; reliability; information equipment; telephone lines; radio; Ansaldo systems ; ENEL lines; minicomputers; microprocessors; performance; train describers ; spacings

Class Codes: C3210 (Control systems and instrumentation); C3250 (Telecontrol and telemetering components); C3360D (Rail-traffic systems); C7420 (Control engineering)

DIALOG(R)File 4:INSPEC

02051683 INSPEC Abstract Number: B83032865
Title: Electric locomotive for the Baikal-Amur mainline
Author(s): Sverdlov, V.Ya.; Shtrepenko, P.K.; Yanov, V.P.
Journal: Elektrotekhnika vol.52, no.11 p.35-9
Publication Date: 1981 Country of Publication: USSR
CODEN: ELKTAQ ISSN: 0013-5860
Translated in: Soviet Electrical Engineering vol.52, no.11 p.73-9
Publication Date: 1981 Country of Publication: USA
CODEN: SOEEAO ISSN: 0038-5379
Language: English Document Type: Journal Paper (JP)
Treatment: Practical (P)
Abstract: The BAM electric locomotive is an AC eight-axle design consisting of two four-axle sections of the same type. Each section has a set of equipment assuring operation of the locomotive in traction mode and in electrical (rheostat) braking mode with either section controlled from the cab. The locomotive is designed to operate with a two-locomotive multiple unit system, with one locomotive crew exercising control from the control station of any locomotive section; the locomotive is provided with a remote-control system. The electric equipment assures operation of the locomotive with a rise in contact-network voltage to 29 kV and a dip to 19 kV. The traction motors are independently excited. The voltage and current of the traction-motor armatures and windings are regulated smoothly by means of the thyristors of the corresponding rectifier units. An automatic control system is provided in the locomotive for both the traction and electric-breaking modes. The system implements acceleration (or deceleration) to the prescribed speed with subsequent automatic maintenance of the speed, the necessary constraints being observed. (0 Refs)
Subfile: B
Descriptors: electric locomotives
Identifiers: electric locomotive; AC; design; electric equipment; automatic control system
Class Codes: B8520 (Transportation)

DIALOG(R)File 4:INSPEC

02020891 INSPEC Abstract Number: B83022590, C83012524
Title: Remote control and monitoring of the Easington Colliery, underground locomotive DC distribution system
Journal: Mining Technology vol.64, no.744 p.443-4
Publication Date: Oct. 1982 Country of Publication: UK
CODEN: MNGTB7 ISSN: 0026-5276
Language: English Document Type: Journal Paper (JP)
Treatment: Applications (A)
Abstract: A telemetry system has been installed at NCB easington Colliery, the purpose of which is to provide remote control, monitoring and fail safe emergency shut down from a surface console, of the 550 V DC supply to an underground locomotive pantograph catenary. The microcomputer-controlled PDT 300 telemetry system supplied by J. Jones Automation Ltd of Nottingham is described. (0 Refs)
Subfile: B C

Descriptors: computerised monitoring; distribution networks; electric locomotives; mining; telecontrol equipment; telemetering equipment

Identifiers: telecontrol; computerised monitoring; mining; monitoring; Easington Colliery; underground locomotive; DC distribution system; telemetry system; NCB easington Colliery; remote control; monitoring; fail safe emergency shut down; console; 550 V DC supply; underground locomotive pantograph catenary

Class Codes: B6210J (Telemetry); B7210F (Telemetering systems); B8120J (Distribution networks); B8699 (Other industries); C3340H (Electric systems); C3360D (Rail-traffic systems); C7420 (Control engineering)

DIALOG(R)File 4:INSPEC

01981566 INSPEC Abstract Number: C83004870

Title: A remote control system for shunting freight cars

Author(s): Sasama, H.; Ikeda, A.

Author Affiliation: Control Engng. Lab., Railway Tech. Res. Inst., Tokyo, Japan

Journal: Quarterly Report of the Railway Technical Research Institute vol.23, no.1 p.24-8

Publication Date: March 1982 Country of Publication: Japan

CODEN: QRTIA8 ISSN: 0033-9008

Language: English Document Type: Journal Paper (JP)

Treatment: Applications (A)

Abstract: A fixed point shunting system is proposed for automation of small/medium yards or freight terminals. An operator in a control center operates all shunting works, monitoring the working field through an ITV picture, and using a Freight Route Control system (FRC), Shunting Locomotive Control system (SLC) and a Remote Controlled Manipulator system (RCM). A standard configuration FPSS is represented. The shunting ability of the system and availability of equipment for man-machine control are investigated. (0 Refs)

Subfile: C

Descriptors: rail traffic; traffic computer control

Identifiers: rail traffic; traffic computer control; remote control system; shunting freight cars; fixed point shunting system; automation

Class Codes: C3360D (Rail-traffic systems); C7420 (Control engineering)

06240285 E.I. No: EIP02517280647

Title: Study on a late-style monitored control system for locomotive security of service

Author: Liu, Qingfeng; Hu, Zhunqing; Miao, Longxiu

Corporate Source: Mechanical and Electronic College Northern Jiaotong University, Beijing 100044, China

Conference Title: Progress in Safety Science and Technology

Conference Location: Taian, China Conference Date: 20021010-20021013

E.I. Conference No.: 60302

Source: Process in Safety Science and Technology Part A v 3 2002.

Publication Year: 2002

ISBN: 703010787X

Language: English

Document Type: CA; (Conference Article) Treatment: T; (Theoretical)

Journal Announcement: 0212W4

Abstract: In this paper, a monitored control system for locomotive security of service based on GSM is designed. The original data monitored by the system is transmitted to the PC system of base station by mobile telephone. Through the statistic analysis of the original data, the locomotive security of service can be real-time monitored and guaranteed. The technique of automatic wireless data-transfer is applied in the system in order to improve the operating efficiency and to lighten the working strength. According to the test results and the subsequent extensive use of the system in Jinan Railway Bureau, the monitored control system for locomotive security of service based on GSM is proved to be reliable and practical. 6 Refs.

Descriptors: *Railroad transportation; Locomotives; Remote control; Computer control systems; Data communication systems; Wireless telecommunication systems; Global system for mobile communications

Identifiers: Locomotive security of service; Monitored control system; Wireless data transfer

Classification Codes:

682.1.2 (Locomotives)

433.1 (Railroad Transportation, General); 682.1 (Railroad Rolling Stock, General); 731.1 (Control Systems); 723.5 (Computer Applications); 716.1 (Information & Communication Theory)

433 (Railroad Transportation); 682 (Railroad Rolling Stock); 731 (Automatic Control Principles & Applications); 723 (Computer Software, Data Handling & Applications); 716 (Electronic Equipment, Radar, Radio & Television)

43 (TRANSPORTATION); 68 (RAILROAD ENGINEERING); 73 (CONTROL ENGINEERING); 72 (COMPUTERS & DATA PROCESSING); 71 (ELECTRONICS & COMMUNICATION ENGINEERING)

05875391 E.I. No: EIP01346622469

Title: Indiana rail road shows how to grow regional business

Author: Anon

Source: Railway Gazette International v 157 n 7 July 2001. p 464+465
Publication Year: 2001
CODEN: RWGIAN ISSN: 0373-5346
Language: English
Document Type: JA; (Journal Article) Treatment: G; (General Review)
Journal Announcement: 0108W4

Abstract: The Indiana Rail Road (INRD) converted a one time marginal routes into a successful regional railway. It showed how to grow regional business by use of innovative technology, labor flexibility, and close attention to service. The innovative services included the distribution facilities that provided for the carload shipments of materials, their storage, inventory, and reshipment. The innovative application of technology cut down crew sizes and enhanced productivity by switch-over to remote control shunting of locomotives. Connections with trunk lines gave INRD the ability to develop new business and strategic marketing initiatives. (Edited abstract)

Descriptors: *Railroads; Industrial economics; Freight transportation; Distribution of goods; Accident prevention; Remote control; Computer networks; Cost effectiveness; Mergers and acquisitions; Railroad traffic control; Quality of service; Strategic planning
Identifiers: Remote control zone; Single-manning programme; Self-diagnosis systems
Classification Codes:
911.2 (Industrial Economics); 914.1 (Accidents & Accident Prevention); 731.1 (Control Systems); 433.4 (Railroad Traffic Control); 912.2 (Management)
681 (Railroad Plant & Structures); 911 (Cost & Value Engineering; Industrial Economics); 433 (Railroad Transportation); 691 (Bulk Handling & Unit Loads); 914 (Safety Engineering); 731 (Automatic Control Principles & Applications); 723 (Computer Software, Data Handling & Applications); 912 (Industrial Engineering & Management)
68 (RAILROAD ENGINEERING); 91 (ENGINEERING MANAGEMENT); 43 (TRANSPORTATION); 69 (MATERIALS HANDLING); 73 (CONTROL ENGINEERING); 72 (COMPUTERS & DATA PROCESSING)

DIALOG(R)File 8:Ei Compendex(R)

05731496 E.I. No: EIP00125438005
Title: Communications-based yard control (CB::YC) system
Author: Denny, JOe; Ruskauff, David
Corporate Source: RailComm, Inc
Conference Title: The 2000 Spring ASME/IEEE Joint Rail Conference
Conference Location: Newark, NJ, USA Conference Date: 20000404-20000406
Sponsor: The Rail Transportation Division; American Society of Mechanical Engineers
E.I. Conference No.: 57602 Source: Proceedings of the IEEE/ASME Joint Railroad Conference 2000. p 95-110
Publication Year: 2000 CODEN: 85NYAW Language: English
Document Type: JA; (Journal Article) Treatment: A; (Applications)
Journal Announcement: 0101W4
Abstract: A low cost, highly reliable approach to automatic yard switch control and routing is presented. Referred to as Communications-Based Yard Control (CB::YC) system, it consists of a PC-based, Windows NT application that remotely controls radio-equipped, solar-powered yard switch machines.
Descriptors: *Railroad yards and terminals; Radio communication; Local area networks; Remote sensing; Computer software; Data communication systems; Railroad transportation
Identifiers: Communication based yard control system; Wireless highly integrated power spring switch machine; Yard dispatch office controller
Classification Codes:
681.2 (Railroad Yards & Terminals); 716.3 (Radio Systems & Equipment); 731.1 (Control Systems); 723.5 (Computer Applications); 723.2 (Data Processing); 433.1 (Railroad Transportation, General)
681 (Railroad Plant & Structures); 716 (Radar, Radio & TV Electronic Equipment); 731 (Automatic Control Principles); 723 (Computer Software); 433 (Railroad Transportation)
68 (RAILROAD ENGINEERING); 71 (ELECTRONICS & COMMUNICATIONS); 73 (CONTROL ENGINEERING); 72 (COMPUTERS & DATA PROCESSING); 43 (TRANSPORTATION)

DIALOG(R)File 8:Ei Compendex(R)

05122371 E.I. No: EIP98094385822
Title: BHP tries radio-controlled ECP braking
Author: Cowin, Alex; Hennessy, Steve
Corporate Source: BHP Iron Ore Railroad
Source: Railway Gazette International v 154 n 9 Sep 1998. p 595-597
Publication Year: 1998
CODEN: RWGIAN ISSN: 0373-5346
Language: English
Document Type: JA; (Journal Article) Treatment: G; (General Review)
Journal Announcement: 9811W3
Abstract: Australian's largest iron ore producer BHP is experimenting with the latest heavy haul technology by fitting radio-controlled electropneumatic brakes to four locos and 240 wagons. BHP launches a pilot project that will see radio-controlled electropneumatic brakes tested in full commercial service on a 240 wagon train. Building on its experience with Locotrol distributed

power, BHP iron ore has chosen GE Harris Railway Electronics to supply radio-based electropneumatic equipment. BHP has worked very closely with GE Harris to enhance the operational features of Locotrol, improving safety and meeting the tough environmental demands of the Pilbara.

Descriptors: *Mine locomotives; Iron mines; Iron ores; Brakes; Control system analysis; Maintenance; Energy efficiency; Remote control; Data acquisition

Identifiers: Radio controlled electropneumatic brakes

Classification Codes:

682.1.2 (Locomotives)

502.2 (Mine & Quarry Equipment); 682.1 (Railroad Rolling Stock, General); 504.3 (Heavy Metal Mines); 545.1 (Iron); 731.1 (Control Systems)

502 (Mine & Quarry Equipment & Operations); 682 (Railroad Rolling Stock); 504 (Mines & Mining, Metal); 545 (Iron & Steel); 602 (Mechanical Drives & Transmissions); 731 (Automatic Control Principles)

50 (MINING ENGINEERING); 68 (RAILROAD ENGINEERING); 54 (METAL GROUPS); 60 (MECHANICAL ENGINEERING); 73 (CONTROL ENGINEERING)

DIALOG(R)File 8:Ei Compendex(R)

04952699 E.I. No: EIP98024086251

Title: Intermodal cane lines re-equip

Author: Anon

Source: Railway Gazette International v 154 n 2 Feb 1998. p 110

Publication Year: 1998

CODEN: RWGIAN ISSN: 0373-5346

Language: English

Document Type: JA; (Journal Article) Treatment: G; (General Review)

Journal Announcement: 9804W4

Abstract: Queensland's extensive 2 ft gauge sugar cane networks are comparable to modern main line standards. In the Mackay region, cane railways are well used and in excellent condition. Some feature pre-stressed concrete bridges over river creeks, while track laid with deep ballast, concrete sleepers and Pandrol fastenings is common. Modern maintenance methods and equipment can be used. The sugarcanes are loaded in bins, which is in fact a two-axle wagon, secured on rails mounted on the trailer lorry for the trip to the nearest railhead. Ingenious traffic system for the cane trains and Queensland Railway's network has also been implemented.

Descriptors: *Railroad transportation; Freight transportation; Railroad traffic control; Railroad signal systems; Railroad crossings; Bins; Diesel locomotives; Cargo handling; Remote control

Identifiers: Intermodal cane lines

Classification Codes:

433.1 (Railroad Transportation, General); 433.4 (Railroad Traffic Control); 681.3 (Railroad Signals & Signaling); 681.1 (Railroad Plant & Structures, General); 694.4 (Storage)

433 (Railroad Transportation); 681 (Railroad Plant & Structures); 694 (Packaging & Storing)

43 (TRANSPORTATION); 68 (RAILROAD ENGINEERING); 69 (MATERIALS HANDLING)

04603653 E.I. No: EIP97013500923
Title: La locomotiva E 402: il primo mezzo ad utilizzazione universale delle FS
Title: E 402 locomotive: the first FS unit for universal use
Author: Piro, Giancarlo; Carillo, Donato
Corporate Source: FS Firenze
Source: Ingegneria Ferroviaria v 51 n 9 Sep 1996. p 643-654
Publication Year: 1996
CODEN: INFEAE ISSN: 0020-0956
Language: English; Italian
Document Type: JA; (Journal Article) Treatment: G; (General Review)
Journal Announcement: 9703W3
Abstract: The locomotive is conceived to increase the towed mass and the commercial speed of passenger trains, both IC and EC and of express night trains, on the whole 3000 Vdc FS network; with possibility of functioning also under a 1500 Vdc catenary at reduced power; very powerful and not too aggressive towards the track. The layout of the machine has been designed according to the principle of modularization and by giving particular attention to the maintenance problems. The locomotives can run both on remote control and on multi-system and therefore an adequate antifire system has been provided for. They are equipped with two ample driver's cabs made according to the international regulations and with particular attention to the problems of ergonomics (driver's desk, air conditioning) and of noise reduction. The power car is equipped with an on-board diagnosing system integrated by an operator guidance which facilitates the driver and the repair operator in troubles detection and restoring operating conditions. (Author abstract)
Descriptors: *Locomotives; Passenger cars; Railroad tracks; Maintenance; Remote control; Ergonomics
Identifiers: Express night trains; Principle of modularization
Classification Codes:
682.1.2 (Locomotives); 682.1.1 (Railroad Cars)
682.1 (Railroad Rolling Stock, General); 681.1 (Railroad Plant & Structures, General); 913.5 (Maintenance); 731.1 (Control Systems); 461.4 (Human Engineering)
682 (Railroad Rolling Stock); 681 (Railroad Plant & Structures); 913 (Production Planning & Control); 731 (Automatic Control Principles); 461 (Biotechnology)
68 (RAILROAD ENGINEERING); 91 (ENGINEERING MANAGEMENT); 73 (CONTROL ENGINEERING); 46 (BIOENGINEERING)

DIALOG(R)File 8:Ei Compendex(R)

04002256 E.I. No: EIP94121503085
Title: Automatic uncoupler completes automation at the hump
Author: Rake, H.; Kurth, M.; Schroeder, W.
Corporate Source: Aachen Univ of Technology, Aachen, Ger
Source: Railway Gazette International v 150 n 6 Jun 1994. p 371-372
Publication Year: 1994 CODEN: RWGIAN ISSN: 0373-5346
Language: English Document Type: JA; (Journal Article)
Treatment: G; (General Review) Journal Announcement: 9502W1
Abstract: Remote control of locomotives in marshalling yards has been possible for some time, but the absence of automatic couplers in Europe has hindered attempts to automate the marshalling process. Knorr Bremse of Germany has now devised a coupler that can be fitted to conventional wagons without major changes. As with other autocouplers, the Knorr design operates when the wagons are pushed together. To uncouple, however, a hand lever must be pulled. Automation of the uncoupling process will bridge the last gap in the automation of marshalling yards. As part of a research and development project sponsored by the German government, the Institute for Automatic Control at Aachen University of Technology has developed a robot for automatic uncoupling of wagons at the hump. Trials have shown that the robot uncoupler can cope with a wide range of circumstances such as short wagons and a high shunting speed up to 3 m/sec. In all cases the robot is able to return to its initial position.
Descriptors: *Railroad yards and terminals; Automation; Robot applications; Freight cars; Separation; Programmable robots; Manipulators; Computer vision; Image processing
Identifiers: Railroad yard automation; Automatic freight car uncouplers; Robotic manipulators; Image processing systems; Video data processing
Classification Codes:
682.1.1 (Railroad Cars)
681.2 (Railroad Yards & Terminals); 731.6 (Robot Applications); 682.1 (Railroad Rolling Stock, General); 741.2 (Vision); 723.2 (Data Processing)
681 (Railroad Plant & Structures); 731 (Automatic Control Principles); 682 (Railroad Rolling Stock); 741 (Optics & Optical Devices); 723 (Computer Software)
68 (RAILROAD ENGINEERING); 73 (CONTROL ENGINEERING); 74 (OPTICAL TECHNOLOGY); 72 (COMPUTERS & DATA PROCESSING)

DIALOG(R)File 8:Ei Compendex(R)

03579295 E.I. Monthly No: EI9304051871
Title: Automatisch in die Zukunft Uberblick, Einblick, Ausblick.
Title: Rolling into the future with automatically-driven trains - overview, insights and outlook.
Author: Fritz, Frederich
Corporate Source: Technische Hochshule Aachen, Aachen
Source: Zeitschrift fuer Eisenbahnwesen und Verkehrstechnik - Glasers Annalen v 116 n 2 Feb 1992 p 33-35, 38-42
Publication Year: 1992 CODEN: ZEVGAK ISSN: 0373-322X Language: German
Document Type: JA; (Journal Article) Treatment: G; (General Review)
Journal Announcement: 9304
Abstract: The railways have at their disposal all the facilities required

for the driverless operation of vehicles and for automatic working. Changeover from manual driving to driverless operation would enable them to substantially improve the performance of the existing equipment and to achieve a higher safety in operation. Referring to the example of the automatically-driven signal-controlled traction unit SST, the paper describes the minimum outlay and effort required for implementing driverless operation. As the automated tasks, such as locating, speed control and signal identification, are performed on board the SST vehicle, there is no need for additional, expensive lineside equipment, enabling a progressive transfer to automatic operation. Conventional manned vehicles and driverless, signal-controlled traction units can run on existing lines at the same time. Following the installation of the SST equipment, automatic driving will be possible not only for locomotive-hauled trains but also for single motor coaches running directly from stop to stop. (Author abstract) 31 Refs. In German.

Descriptors: *RAILROAD TRANSPORTATION; AUTOMATION; RAILROAD SIGNAL SYSTEMS; OBSTACLE DETECTORS; REMOTE CONTROL

Identifiers: DRIVERLESS OPERATION; REMOTE SIGNALS; SIGNAL IDENTIFICATION

Classification Codes:

681 (Railroad Plant & Structures); 682 (Railroad Rolling Stock); 731 (Automatic Control Principles)

68 (RAILROAD ENGINEERING); 73 (CONTROL ENGINEERING)

DIALOG(R)File 8:Ei Compendex(R)

02787819 E.I. Monthly No: EI8909083700

Title: Selektive funkferngesteuerte Entladung von Schuettgut - Selbstentladewagen mit Handfunksprechgeraeten.

Title: Selective remote control by means of walkie-talkie for the discharging operations of self-dumping cars carrying bulk goods.

Author: Zoelle, Guenther

Corporate Source: Eisenbahn & Haefen, Duisburg, West Ger

Source: Thyssen Technische Berichte v 20 n 2 1988 p 333-336

Publication Year: 1988

CODEN: TBTHDV ISSN: 0340-5060

Language: German

Document Type: RC; (Report Chapter) Treatment: G; (General Review)

Journal Announcement: 8909

Abstract: The paired use of the new generation of portable walkie-talkies makes it possible successively to discharge all cars of a train at the point of discharge by means of remote radio control without having to observe any specific sequence of cars and regardless of any remote radio control that may already exist on the locomotive. For this purpose, the cars have to be provided with an energy carrier. A 5-channel electric cable connects the receiver on the locomotive with all cars to be accessed. A 'car evaluator' using a microprocessor and a 5-digit code which reflects the respective car number processes for each and every car the car number and the opening or closing order from the keyboard of the walkie-talkie, thus releasing for discharge only the car chosen. A 'locking circuit' prevents further cars of the train from being accessed and opened. While the remotely controlled discharge operation is under way, one radio channel each is open for the operator to be called up. For radio communication, up to 1,000 externally switchable radio channels are available. (Author abstract) In German.

Descriptors: *CARS--*Freight; RAILROAD ROLLING STOCK--Remote Control; REMOTE CONTROL
Identifiers: PORTABLE RADIO CONTROL; DUMPING CONTROL; FLAP OPENERS; UNLOADING LOCKS
Classification Codes:
682 (Railroad Rolling Stock); 732 (Control Devices); 716 (Radar, Radio & TV Electronic Equipment)
68 (RAILROAD ENGINEERING); 73 (CONTROL ENGINEERING); 71 (ELECTRONICS & COMMUNICATIONS)

02680483 E.I. Monthly No: EI8812117375
Title: REMOTE-CONTROL SYSTEMS FOR ELECTRIC-RAILWAY POWER NETWORKS.
Author: Mizutani, Tsugio
Corporate Source: Mitsubishi Electric Corp Power and Industrial Systems Cent, Jpn
Source: Mitsubishi Electric Advance v 43 Jun 1988 p 16-18
Publication Year: 1988 CODEN: MEADD4 ISSN: 0386-5096
Language: English
Document Type: JA; (Journal Article) Treatment: A; (Applications)
Journal Announcement: 8812
Abstract: Owing to the growing population of Japan's large cities and suburbs, electric trains are being run more frequently and are longer. To prevent train service interruptions, reliable power-supply networks are essential. If a fault occurs in a network, the central power-control office must first identify the problem and its consequences, and then swiftly and safely perform the complicated power-rerouting operations to restore services. In complicated applications where a single central computer cannot meet the processing requirements, smaller computers have been installed in substations, and are linked to the central computer via a communication network. Such systems generally employ a fault-tolerant design that upgrades system automation while ensuring system operation. This article covers the features and software functions of these remote-control systems, and introduces two typical installations.
Descriptors: *LOCOMOTIVES, ELECTRIC--*Remote Control; CONTROL SYSTEMS; COMPUTER SOFTWARE
Identifiers: ELECTRIC-RAILWAY POWER NETWORKS; REMOTE-CONTROL SYSTEMS; SOFTWARE FUNCTIONS
Classification Codes:
682 (Railroad Rolling Stock); 732 (Control Devices); 731 (Automatic Control Principles); 723 (Computer Software)
68 (RAILROAD ENGINEERING); 73 (CONTROL ENGINEERING); 72 (COMPUTERS & DATA PROCESSING)

DIALOG(R)File 8:Ei Compendex(R)

02605943 E.I. Monthly No: EI8807066950
Title: L'EQUIPAGGIAMENTO ELETTRICO DEL TRENO ETR 500 PER IL SISTEMA AD ALTA VELOCITA DELLE FS.
Title: Electric Equipment of the ETR 500 Train for the FS (Italian State Railroads) High-Speed System.
Author: Gomisel, Giorgio
Corporate Source: Direzione Centrale Materiale Rotabile, Italy
Source: Ingegnaria Ferroviaria v 43 n 1-2 Jan-Feb 1988 p 28-34
Publication Year: 1988 CODEN: INFEAE ISSN: 0020-0956 Language: Italian
Document Type: JA; (Journal Article) Treatment: A; (Applications); G; (General Review) Journal Announcement: 8807
Abstract: A description is given in the article of the main characteristics of the electrical equipment of the ETR 500. In particular, examination is made of the traction drive and the choices made for the definition of the auxiliary services which form an integrated electrical system between the power and trailer units. Another important aspect developed for the ETR 500 is the system of remote control and automation of the train which permits the centralized control of all the train equipment with a high degree of reliability; lastly the problem of the diagnostics of the equipment and relative supervision system is dealt with. In Italian.
Descriptors: *RAILROAD ROLLING STOCK--*Electric Equipment; ELECTRIC TRACTION--Control Systems; CARS--Electric Equipment; LOCOMOTIVES, ELECTRIC --Control Systems; RAILROAD SIGNALS AND SIGNALING--Centralized Control; REMOTE CONTROL
Identifiers: ETR 500 HIGH-SPEED TRAIN; TRACTION DRIVE
Classification Codes:
682 (Railroad Rolling Stock); 681 (Railroad Plant & Structures); 433 (Railroad Transportation); 731 (Automatic Control Principles); 732 (Control Devices)
68 (RAILROAD ENGINEERING); 43 (TRANSPORTATION); 73 (CONTROL ENGINEERING)

DIALOG(R)File 8:Ei Compendex(R)

02597347 E.I. Monthly No: EIM8806-036428
Title: RADIO CONTROL - A SYSTEM FOR THE FUTURE.
Author: Scott, G.; Bennett, G.
Corporate Source: British Railroads Board, Derby, Engl
Conference Title: Proceedings of the Institution of Mechanical Engineers, International Conference: Diesel Locomotives for the Future.
Conference Location: York, Engl Conference Date: 19870407
Sponsor: Inst of Mechanical Engineers, Railway Div, London, Engl; Assoc of American Railroads, USA; ASME, Rail Transportation Div, New York, NY, USA; Constructeurs Europeens de Locomotives Thermiques et Electriques; IEE, London, Engl; et al E.I. Conference No.: 11291 Source: I Mech E Conference Publications (Institution of Mechanical Engineers) 1987-3. Publ by Mechanical Engineering Publ Ltd, Bury St. Edmunds, Engl p 157-163
Publication Year: 1987 CODEN: IMEPD4 ISSN: 0144-0799 ISBN: 0-85298-627-0
Language: English Document Type: PA; (Conference Paper)
Journal Announcement: 8806
Abstract: The paper outlines the history of remote control on British Rail

starting with the inductive loop systems and the developments leading to the application of radio control to shunting locomotives in the 1970's both on British Railways and private industrial sites. The various types of system will be compared and discussed. The paper will discuss the application of radio control in the UK and the continent including radio controlled shunting locomotives, robot locomotives, main line push-pull operation of coal trains and the application of radio to remote control of M G R trains in the 1980's. The possible future development of radio for remote diagnosis of faults as a maintenance aid, vehicle identification, remote weighing and total driverless operation will be raised. (Edited author abstract) 4 refs.

Descriptors: *RAILROADS--*Remote Control; RADIO EQUIPMENT--Applications; CONTROL SYSTEMS; RADIO SYSTEMS

Identifiers: RADIO CONTROL; INDUCTIVE LOOP SYSTEMS; RADIO CONTROLLED PUSH PULL WORKING; EGGBOROUGH EXPERIMENT

Classification Codes:

681 (Railroad Plant & Structures); 732 (Control Devices); 714 (Electronic Components); 716 (Radar, Radio & TV Electronic Equipment)

68 (RAILROAD ENGINEERING); 73 (CONTROL ENGINEERING); 71 (ELECTRONICS & COMMUNICATIONS)

DIALOG(R)File 8:Ei Compendex(R)

02339265 E.I. Monthly No: EI8712127204

Title: CP RAIL MOVES TOWARD ATCS.

Author: Geddis, J. H.

Corporate Source: CP Rail, Can

Source: Railway Age v 188 n 8 Aug 1987 p 45, 47

Publication Year: 1987

CODEN: RAAGA3 ISSN: 0033-8826

Language: ENGLISH

Document Type: JA; (Journal Article) Treatment: G; (General Review)

Journal Announcement: 8712

Abstract: CP Rail is working steadily toward installation of a complete prototype or pre-production Advanced Train Control System. It has developed and implemented a system called CMBS, for Computer Aided Manual Block System. The system was introduced in mid-1985 and has been rapidly expanded so that it is now in use on about 11,000 miles of CP Rail's network. The system provides for computer check of all train movement authorities and eliminates human error at the dispatcher level. The CMBS system has been found to be superior to the train order system, which it replaced, not only in safety but for more expeditious movement of trains. The return of investment has been nothing short of spectacular.

Descriptors: *RAILROADS--*Automatic Train Control; TELECOMMUNICATION LINKS, RADIO; CONTROL SYSTEMS, PROGRAMMED

Identifiers: ADVANCED TRAIN CONTROL SYSTEMS; COMPUTER-AIDED MANUAL BLOCK SYSTEM; REMOTE-CONTROLLED SWITCHES; REMOTE RADIO CONTROL

Classification Codes:

681 (Railroad Plant & Structures); 716 (Radar, Radio & TV Electronic Equipment); 731 (Automatic Control Principles)

68 (RAILROAD ENGINEERING); 71 (ELECTRONICS & COMMUNICATIONS); 73 (CONTROL ENGINEERING)

DIALOG(R)File 8:Ei Compendex(R)

02156873 E.I. Monthly No: EI8701008265
Title: Modern Auxiliary Vehicle: The Self-Propelled Tractor.
Title: UN VEHICULE AUXILIAIRE MODERNE: LE TRACTEUR A MARCHE AUTONOME (TMA).
Author: Mouly, Roland; Duceux, Daniel
Corporate Source: RATP, Fr
Source: Revue Generale des Chemins de Fer v 105 n 5 May 1986 p 313-322
Publication Year: 1986 CODEN: RGCFAI ISSN: 0035-3183
Language: FRENCH Document Type: JA; (Journal Article)
Treatment: G; (General Review) Journal Announcement: 8701
Abstract: The Paris Metro (RATP) has ordered 14 tractors of a new type for moving engineering trains during work on track renewal sites. Each of these 60-ton tractors can move a 90-ton load at 45km/h with the normal 750V current supply and at 15km/h when using independent power from the 770 Ah battery on board. The motive power is obtained from two independent bogies both fitted with two 200kW motors and two reducers connected by a vane coupler. Each bogie is controlled by a 600Hz chopper working with high-performance asymmetric thyristors. The control logic of each chopper is based on the use of a type 6809 microprocessor. A charger, of identical design to the traction choppers, controls the discharging and charging of the traction battery with its 210 lead cells required for supplying power for one night. The tractor is fitted with an electrically controlled pneumatic brake system together with an emergency brake, and a remote-controlled immobilization brake. (Edited author abstract) In French.
Descriptors: *RAILROAD PLANT AND STRUCTURES--*Maintenance of Way; LOCOMOTIVES, ELECTRIC--Design; SUBWAYS--Paris, France; ELECTRIC TRACTION--Control
Identifiers: CHOPPER CONTROL
Classification Codes:
681 (Railroad Plant & Structures); 682 (Railroad Rolling Stock); 705 (Electric Generators & Motors)
68 (RAILROAD ENGINEERING); 70 (ELECTRICAL ENGINEERING)

DIALOG(R)File 8:Ei Compendex(R)

02096115 E.I. Monthly No: EIM8606-036917
Title: USE OF MULTIPLEX SYSTEMS FOR VEHICLE CONTROL.
Author: McCullough, I.
Corporate Source: Dowty Electronics Ltd, Ripper Systems Div
Conference Title: Railway Industry Association of Great Britain - Eighth Motive Power Course, 1984.
Conference Location: Nottingham, Engl Conference Date: 19840716
Sponsor: Railway Industry Assoc of Great Britain, London, Engl; British Railways Board, Engl; Overseas Development Administration; British Council, London, Engl E.I. Conference No.: 05956
Source: Publ by Railway Industry Assoc of Great Britain, London, Engl Pap SP43, 3p
Publication Year: 1984 Language: English
Document Type: PA; (Conference Paper) Journal Announcement: 8606
Abstract: This paper deals with the use of electronic systems to provide control in the following situations: (1) multiple power units distributed

along a train as in heavy freight/mineral working; (2) push/pull pull operation using driving trailer vehicles, locomotives and standard coaching stock; and (3) sophisticated multiple unit urban stock. The use of the same equipment to provide health monitoring is also discussed. (Edited author abstract)

Descriptors: *RAILROAD ROLLING STOCK--*Control; DIESEL ELECTRIC TRACTION --Design; LOCOMOTIVES--Brakes; FINAL CONTROL DEVICES, ELECTRIC--Testing

Identifiers: MULTIPLEX SYSTEMS; VEHICLE CONTROL; PUSH/PULL OPERATION; INDUSTRIAL REMOTE CONTROL

Classification Codes:

682 (Railroad Rolling Stock); 612 (Combustion Engines); 704 (Electric Components & Equipment); 732 (Control Devices)

68 (RAILROAD ENGINEERING); 61 (PLANT & POWER ENGINEERING); 70 (ELECTRICAL ENGINEERING); 73 (CONTROL ENGINEERING)

DIALOG(R)File 8:Ei Compendex(R)

02069325 E.I. Monthly No: EIM8601-006588

Title: SUPERVISION AND CONTROL OF REMOTE LOCOMOTIVES IN LONG MINERAL TRAINS.

Author: Gollogly, K. S.

Corporate Source: Queensland Railways, Aust

Conference Title: Conference on Railway Engineering 1985: Electrification - Railways to the Year 2000, Preprints of Papers.

Conference Location: Brisbane, Aust Conference Date: 19850617

Sponsor: Inst of Engineers, Australia, Natl Committee on Railway Engineering, Barton, Aust

E.I. Conference No.: 07393

Source: National Conference Publication - Institution of Engineers, Australia n 85/5. Publ by Inst of Engineers, Australia, Barton, Aust p 26-30

Publication Year: 1985

CODEN: NPIEDX ISSN: 0313-6922 ISBN: 0-85825-258-9

Language: English

Document Type: PA; (Conference Paper)

Journal Announcement: 8601

Abstract: The synchronous control of two or more groups of locomotives in a train, allows train length and mass to be increased, while reducing wagon stresses and improving braking performance. This paper outlines the application of remote locomotive control sytems on Queensland Railways including a brief system description and improvements provided by the second generation microprocessor based system. (Edited author abstract)

Descriptors: *LOCOMOTIVES, ELECTRIC--*Remote Control; COAL TRANSPORTATION ; RAILROADS--Automatic Train Control; LOCOMOTIVES--Brakes

Identifiers: REMOTE CONTROL EQUIPPED (RCE) TRAINS; LOCOTROL MODEL; INCREASE IN TRAIN LENGTH; RADIO MODULE

Classification Codes:

682 (Railroad Rolling Stock); 732 (Control Devices); 524 (Solid Fuels) ; 433 (Railroad Transportation); 681 (Railroad Plant & Structures)

68 (RAILROAD ENGINEERING); 73 (CONTROL ENGINEERING); 52 (FUEL TECHNOLOGY); 43 (TRANSPORTATION)

DIALOG(R)File 8:Ei Compendex(R)

02051488 E.I. Monthly No: EI8612126965 E.I. Yearly No: EI86098052
Title: RADIO SIGNALLING CUTS COSTS IN THE BLACK FOREST.
Author: Schmehling, Heinz
Corporate Source: German Federal Railway, Karlsruhe, West Ger
Source: Railway Gazette International v 142 n 7 Jul 1986 p 488-490
Publication Year: 1986 CODEN: RWGIAN ISSN: 0373-5346 Language: ENGLISH
Document Type: JA; (Journal Article) Treatment: A; (Applications); G; (General Review) Journal Announcement: 8612
Abstract: German Federal Railway's (DB) Single-Track branch line which runs for 19 km from Titisee to Seebrugg was converted to radio signalling as a pilot project in May 1984. Apart from its inherent flexibility, radio signalling has the advantage that it needs considerably less investment than conversion to colourlight signalling with remote control (CTC). Even if the simplest form of remote control conventional signalling is chosen, it is still relatively expensive when compared with radio signalling. DB's standard on-train radio equipment with selective calling proved to be quite suitable for radio signalling. The ground equipment, however, had to be linked to the dispatching office through a relay interlocking, which provides the safety checks before permission to proceed can be given. With DB's radio signalling, it is not essential to achieve blanket radio coverage on the whole route; gaps are permissible on open line which allows costs to be kept to a minimum.
Descriptors: *RAILROAD SIGNALS AND SIGNALING--*Interlocking; RADIO COMMUNICATION--Applications; SPEECH--Transmission
Identifiers: RADIO SIGNALING; SPEECH GENERATION
Classification Codes:
681 (Railroad Plant & Structures); 716 (Radar, Radio & TV Electronic Equipment); 751 (Acoustics)
68 (RAILROAD ENGINEERING); 71 (ELECTRONICS & COMMUNICATIONS); 75 (ACOUSTICAL TECHNOLOGY)

DIALOG(R)File 8:Ei Compendex(R)

02012443 E.I. Monthly No: EI8609085711 E.I. Yearly No: EI86066883
Title: Controlling Transfer Tables from the Driver's Cab.
Title: SCHIEBEBUEHNEN MIT LOKOMOTIVFUEHRER-SELBSTBEDIENUNG.
Author: Schmidt, Hartmut
Corporate Source: Bundesbahn-Zentralamt Minden, Minden, West Ger
Source: Zeitschrift fuer Eisenbahnwesen und Verkehrstechnik - Glasers Annalen v 109 n 8 Aug 1985 p 346-350
Publication Year: 1985
CODEN: ZEVGAK ISSN: 0373-322X
Language: GERMAN
Document Type: JA; (Journal Article) Treatment: G; (General Review); T; (Theoretical)
Journal Announcement: 8609
Abstract: Compact railway workshops for motive power units will continue to use transfer tables in the future. To streamline operations, remote control of the transfer table from the driver's cab is recommended. Depending on the degree of streamlining, the transfer tables can be equipped either with a destination control or with a calling and destination control. The high

availability specified for such automatically controlled transfer tables can, however, only be achieved by means of stored-program control with integrated fault alarm system. (Edited author
abstract) In German.
Descriptors: *LOCOMOTIVES--*Switching; REMOTE CONTROL; RAILROAD YARDS AND TERMINALS
Classification Codes:
682 (Railroad Rolling Stock); 732 (Control Devices); 681 (Railroad Plant & Structures)
68 (RAILROAD ENGINEERING); 73 (CONTROL ENGINEERING)

DIALOG(R)File 8:Ei Compendex(R)

01974743 E.I. Monthly No: EI8605038443 E.I. Yearly No: EI86039447
Title: Electrification of the Railways of the USSR: Current State and Prospects.
Title: ELEKTRIFIZIERUNG DER EISENBAHNEN DER UDSSR: STAND UND AUSSICHTEN.
Author: Schilkin, Peter M.; Lissizin, Alexander L.
Corporate Source: Ministerium fuer Verkehrswesen der UdSSR, USSR
Source: Elektrische Bahnen v 84 n 1 1986 p 16, 18-28
Publication Year: 1986
CODEN: ELBAAQ ISSN: 0013-5437
Language: GERMAN
Document Type: JA; (Journal Article) Treatment: G; (General Review)
Journal Announcement: 8605
Abstract: About 47,920 route km, or 33. 2% of the total network, of the Soviet railways are operated electrically at present. The share of 3000 V dc lines is about 26,970 route km (56. 3%), while that of 25 kv/50 Hz dc lines is about 20,950 route km (43, 7%). Special installations for the gap sections between current systems have been constructed. In the future, ac lines will be operated with 2 X 25 kv and feeder. The electric traction units are increasingly constructed with power electronics. Locomotives with three-phase drive technology are being developed. The ac substations supply the electrified lines as well as the consumers of the public supply mains. A description is given of the construction and circuitry of the substations. The overhead contact system is being further developed for higher speeds and in order to reduce maintenance costs. The energy supply installations are extensively automated and remote-controlled. (Edited author abstract) In German.
Descriptors: *ELECTRIC RAILROADS--*USSR; ELECTRIC TRACTION--Electric Equipment
Classification Codes:
681 (Railroad Plant & Structures); 705 (Electric Generators & Motors)
68 (RAILROAD ENGINEERING); 70 (ELECTRICAL ENGINEERING)

DIALOG(R)File 8:Ei Compendex(R)

01842093 E.I. Monthly No: EI8512119320 E.I. Yearly No: EI85063877
Title: Radio Remote Control for VPS Shunting Operations.
Title: VPS-RANGIERTECHNIK IM SYSTEM FUNKFERNSTEUERUNG.
Author: Koerbs, Thorald
Corporate Source: Verkehrsbetriebe Peine-Salzgitter, Salzgitter, West Ger
Source: Zeitschrift fuer Eisenbahnwesen und Verkehrstechnik - Glasers Annalen v 109 n 2-3 Feb-Mar 1985, 22nd Tag Mod Schienenfahrzeuge, Graz, Austria, Oct 7-10 1984 p 142-148
Publication Year: 1985 CODEN: ZEVGAK ISSN: 0373-322X
Language: GERMAN Document Type: JA; (Journal Article)
Treatment: G; (General Review) Journal Announcement: 8512
Abstract: The introduction of radio remote control as a system in railway transport is a capital investment with a relatively short payback period. This is revealed by comparing the quantifiable variables, such as conversion of locomotives, and equipment for local signaling and interlocking operations with the potential savings in the fields of staff costs and signal box equipment. Maximum economic success can, however, be achieved if the organization and the equipment required for operations are modified within a reasonably short period of time. This approach will result in many nonquantifiable benefits, as is illustrated by the radio remote control measures implemented by Verkehrsbetriebe Peine-Salzgitter (VPS). (Edited author abstract) 10 refs. In German.
Descriptors: *LOCOMOTIVES, DIESEL--*Switching; RADIO SYSTEMS, MOBILE; RAILROAD TRANSPORTATION--Freight; RAILROAD PLANT AND STRUCTURES--Track Switches; REMOTE CONTROL
Identifiers: RADIO REMOTE CONTROL; SHUNTING LOCOMOTIVES; ELECTRICALLY OPERATED SWITCHES; AUTOMATIC SHUNTING
Classification Codes:
682 (Railroad Rolling Stock); 732 (Control Devices); 716 (Radar, Radio & TV Electronic Equipment); 433 (Railroad Transportation); 681 (Railroad Plant & Structures)
68 (RAILROAD ENGINEERING); 73 (CONTROL ENGINEERING); 71 (ELECTRONICS & COMMUNICATIONS); 43 (TRANSPORTATION)

DIALOG(R)File 8:Ei Compendex(R)

01842092 E.I. Monthly No: EI8512119319 E.I. Yearly No: EI85063867
Title: Modern Shunting Locomotives.
Title: MODERNE RANGIERLOKOMOTIVEN.
Author: Zander, Carl-Peter; Schoenenberger, Albert
Corporate Source: Krauss-Maffei AG, Geschaeftsbereich Verkehrstechnik, Munich, West Ger
Source: Zeitschrift fuer Eisenbahnwesen und Verkehrstechnik - Glasers Annalen v 109 n 2-3 Feb-Mar 1985, 22nd Tag Mod Schienenfahrzeuge, Graz, Austria, Oct 7-10 1984 p 131-141
Publication Year: 1985 CODEN: ZEVGAK ISSN: 0373-322X
Language: GERMAN Document Type: JA; (Journal Article)
Treatment: G; (General Review); X; (Experimental)
Journal Announcement: 8512
Abstract: Reasons are given for using diesel-electric traction side by side

with diesel-hydraulic traction. The main features of the Krauss-Maffei modular system area described, using the ME 05 diesel electric locomotive. Mention is made of the possibilities available for designing locomotive control for the requirements arising, including fully automatic driving using radio control, with the main focus on the safety requirements. (Edited author abstract) 18 refs. In German.

Descriptors: *LOCOMOTIVES, DIESEL--*Design; MODULAR CONSTRUCTION; RAILROAD TRANSPORTATION--Freight; LOCOMOTIVES--Switching; REMOTE CONTROL

Identifiers: SHUNTING LOCOMOTIVES; DIESEL ELECTRIC TRACTION; DIESEL HYDRAULIC TRACTION

Classification Codes:

682 (Railroad Rolling Stock); 433 (Railroad Transportation); 732 (Control Devices); 601 (Mechanical Design)

68 (RAILROAD ENGINEERING); 43 (TRANSPORTATION); 73 (CONTROL ENGINEERING); 60 (MECHANICAL ENGINEERING)

01784038 E.I. Monthly No: EI8508064182 E.I. Yearly No: EI85017893

Title: DEVELOPMENTS IN THE TRANSPORT OF MEN AND MATERIALS.

Author: Willey, J. A.

Source: Colliery Guardian v 233 n 1 Jan 1985 p 9-10, 12-14

Publication Year: 1985

CODEN: CLGUAL ISSN: 0010-1281

Language: ENGLISH

Document Type: JA; (Journal Article) Treatment: G; (General Review)

Journal Announcement: 8508

Abstract: The article summarizes developments in materials vehicles, remote control, manriding facilities, vehicle monitoring, powered lifting equipment, packaged loads and locomotives.

Descriptors: *COAL MINES AND MINING--*Equipment; LOCOMOTIVES

Identifiers: UNDERGROUND TRANSPORTATION; ENGLAND

Classification Codes:

503 (Mines & Mining, Coal); 682 (Railroad Rolling Stock)

50 (MINING ENGINEERING); 68 (RAILROAD ENGINEERING)

01599818 E.I. Monthly No: EI8412133567 E.I. Yearly No: EI84071456

Title: Present State of Development of Radio-controlled Locomotive Operation.

Title: STAND DER ENTWICKLUNG DES FUNKFERNGESTEUERTEN LOKOMOTIVBETRIEBES.

Author: Jesberg, Karl-Heinz Corporate Source: Verkehrsbetriebe Peine-Salzgitter GmbH,Salzgitter, West Ger

Source: Zeitschrift fuer Eisenbahnwesen und Verkehrstechnik - Glasers Annalen v 107 n 11 Nov 1983 p 380-385

Publication Year: 1983 CODEN: ZEVGAK ISSN: 0373-322X

Language: GERMAN Journal Announcement: 8412

Abstract: The introduction of radio control as a standard feature of nonfederal public and private railways in the Federal Republic of Germany

during the mid-seventies has paved the way for a vast rationalization potential. Meanwhile, more than 200 of these nonfederal locomotives have been converted to radio control, and nearly another 100 locomotives are being converted at present. Thanks to the advances in the field of microelectronics, less costly solutions have been developed for the technical systems, and experience has shown that they give trouble-free performance. As a result of technical and operational systems, radio-controlled operation is nowadays superior to the conventional manual mode as regards smoothness, safety and ergonomic requirements. This paper describes the introduction of radio control in the network of Verkehrsbetriebe Peine-Salzgitter GMBH (VPS). At present, 46 radio-controlled locomotives are in service, and VPS intends to convert their entire locomotive stock to radio control by 1985. 6 refs. In German.

Descriptors: *LOCOMOTIVES, DIESEL--*Remote Control; TELECOMMUNICATION LINKS, RADIO

Classification Codes:

682 (Railroad Rolling Stock); 716 (Radar, Radio & TV Electronic Equipment)

68 (RAILROAD ENGINEERING); 71 (ELECTRONICS & COMMUNICATIONS)

01319434 E.I. Monthly No: EI8301003859 E.I. Yearly No: EI83053300

Title: Light Multi-purpose Locomotives Class E117 with Three-phase Current Technique of the Norwegian State Railroads.

Title: LEICHTE UNIVERSALLOKOMOTIVEN EL17 DER NORWEGISCHEN STAATSBAHN MIT DREHSTROMANTRIEBSTECHNIK.

Author: Reichelt, Erich

Corporate Source: Brown Boveri & Co, Mannheim, Ger

Source: Elektrische Bahnen v 80 n 7 Jul 1982 p 207-214

Publication Year: 1982 CODEN: ELBAAQ ISSN: 0013-5437

Language: GERMAN Journal Announcement: 8301

Abstract: New fast train sets of the Norwegian State Raliroads are provided for taking curves at increased speeds. For this purpose the four-axle locomotives class E117 with three-phase current technique with an axle load of 16t and 3M continuous rating have been developed. These locomotives are characterized by micro-computer aided control, optional tractive speed regulation and time-division multiplex remote control for driving trailers and double heading. The electric equipment of the locomotives is described. In German.

Descriptors: *LOCOMOTIVES, ELECTRIC--*Norway

Classification Codes:

682 (Railroad Rolling Stock); 715 (General Electronic Equipment)

68 (RAILROAD ENGINEERING); 71 (ELECTRONICS & COMMUNICATIONS)

DIALOG(R)File 8:Ei Compendex(R)

01319429 E.I. Monthly No: EI8301003858 E.I. Yearly No: EI83053299
Title: LEICHTE UNIVERSALLOKOMOTIVEN EL 17 DER NORWEGISCHEN STAATSBAHN MIT DREHSTROMANTRIEBSTECHNIK - 2. [Light Multi-purpose Locomotive Class El 17 with Three-phase Current Technique of the Norwegian State Railroads - 2] .
Author: Reichelt, Erich
Corporate Source: Brown Boveri & Co, Mannheim, Ger
Source: Elektrische Bahnen v 80 n 8 Aug 1982 p 231-233
Publication Year: 1982
CODEN: ELBAAQ ISSN: 0013-5437
Language: ENGLISH
Journal Announcement: 8301
Abstract: This is part 2 of a paper, the first part of which was published in Elektrische Bahnen v 80 n 7, July 1982, p 207-214. In this part the blower of the traction motor and the auxiliary static frequency changer are described. Electronic control equipment is discussed. This includes the regulation of speed and remote control facilities. 6 refs.
Descriptors: *LOCOMOTIVES, ELECTRIC--*Norway
Classification Codes:
682 (Railroad Rolling Stock); 715 (General Electronic Equipment)
68 (RAILROAD ENGINEERING); 71 (ELECTRONICS & COMMUNICATIONS)

DIALOG(R)File 8:Ei Compendex(R)

01093399 E.I. Monthly No: EI8202015029 E.I. Yearly No: EI82085261
Title: USE OF MICROPROCESSORS IN RAILWAYS SYSTEMS (COLLOQUIUM), 1981.
Author: Anon
Corporate Source: IEE, Power & Comput & Control Div, London, Engl
Source: IEE Colloquium (Digest) n 1981/3, Colloq on Use of Microprocess in Railw Syst, London, Engl. Publ by IEE, London, Engl, 1981 var pagings
Publication Year: 1981
CODEN: DCILDN
Language: ENGLISH
Journal Announcement: 8202
Abstract: Proceedings include 5 papers that deal with the remote control of electric traction power supply equipment, observations on service experience with APT speed advisory system using microprocessors, microprocessor applications and underground trains, radio control of block instruments, and metro microprocessor controlled positive train identification system.
Descriptors: *RAILROADS--*Automatic Train Control; REMOTE CONTROL; RADIO COMMUNICATION; COMPUTERS, MINIATURE
Identifiers: RAILROAD TRAINS
Classification Codes:
433 (Railroad Transportation); 681 (Railroad Plant & Structures); 732 (Control Devices); 716 (Radar, Radio & TV Electronic Equipment); 723 (Computer Software)
43 (TRANSPORTATION); 68 (RAILROAD ENGINEERING); 73 (CONTROL ENGINEERING); 71 (ELECTRONICS & COMMUNICATIONS); 72 (COMPUTERS & DATA PROCESSING)

01013486 E.I. Monthly No: EI8104033796 E.I. Yearly No: EI81054540

Title: Use of Radio Transmission for Remote Control of a Shunting Locomotive.

Title: VYUZITI BEZDRATOVEHO PRENOSU K DALKOVEMU RIZENI POSUNOVACICH LOKOMOTIV.

Author: Gabriel, Jiri

Source: Elektrotechnicky Obzor v 69 n 8 Aug 1980 p 452-454

Publication Year: 1980

CODEN: EKOBAJ ISSN: 0013-5798

Language: CZECH

Journal Announcement: 8104

Abstract: A remote control system was developed which is representative of installations coupled to the drive system for an automatic velocity control of the vehicle. Duplex radio communication in the 1-m wave band makes possible the transmission of signals in both directions between the fixed control station and the vehicle. Discrete values of the velocities and two state commands are coded in the circuits which use integrated circuits of small and medium density of integration. The dynamic transmission system of information, which is effected by a series of tone combinations frequency modulated on a carrier high frequency, makes possible a periodic reply of the given and rechecked data 4 times per second. Monitor circuits protect the system not only against an improper sequence of manipulations during the control but monitor also the proper functions of the system. If these fail, the vehicle is brought to a stop. 1 ref. In Czech.

Descriptors: *LOCOMOTIVES, ELECTRIC--*Remote Control; RADIO TRANSMISSION

Classification Codes:

682 (Railroad Rolling Stock); 732 (Control Devices); 716 (Radar, Radio & TV Electronic Equipment)

68 (RAILROAD ENGINEERING); 73 (CONTROL ENGINEERING); 71 (ELECTRONICS & COMMUNICATIONS)

01013485 E.I. Monthly No: EI8104033795 E.I. Yearly No: EI81054522

Title: Speed Control of Railroad Traction Vehicles and Its Use by Diesel Locomotives.

Title: REGULACE RYCHLOSTI KOLEJOVYCH TRAKCNICH VOZIDEL A JEJI POUZITI U MOTOROVYCH LOKOMOTIV.

Author: Kubik, Lubor; Sula, Bozetech

Source: Elektrotechnicky Obzor v 69 n 8 Aug 1980 p 449-451

Publication Year: 1980

CODEN: EKOBAJ ISSN: 0013-5798

Language: CZECH

Journal Announcement: 8104

Abstract: The development of electronics made possible the construction of equipment for automatic control of railroad traction vehicles. The principal element of this equipment is the speed regulator which is discussed. In case of main-line locomotives, the speed governor can be supplemented by an accurate destination braking device. In case of shunting locomotives, the speed governor can be supplemented by hf remote control of the desired speed,

running direction and further functions from the control sorting center of the marshaling yard. The motor locomotive CKD type T 478. 4 is the first locomotive in serial production, the speed governor of which is connected through its outputs directly to the control circuits without an interface element. 1 ref. In Czech.

Descriptors: *LOCOMOTIVES, DIESEL--*Speed Control; ELECTRIC RAILROADS--Speed Control; CONTROL EQUIPMENT, ELECTRIC

Classification Codes:

682 (Railroad Rolling Stock); 681 (Railroad Plant & Structures); 732 (Control Devices); 715 (General Electronic Equipment)

68 (RAILROAD ENGINEERING); 73 (CONTROL ENGINEERING); 71 (ELECTRONICS & COMMUNICATIONS)

00941577 DA

TITLE: MATERIAL HANDLING : GETTING VERSATILE

AUTHOR(S): Wanek, M

CORPORATE SOURCE: Simmons-Boardman Publishing Corporation, 345 Hudson Street, New York , NY, 10014,

JOURNAL: Railway Track and Structures Vol: 99 Issue Number: 3 Pag: pp 21-24

PUBLICATION DATE: 20030300 PUBLICATION YEAR: 2003

LANGUAGE: English SUBFILE: BTRIS; RRIS (B; R)

SOURCE ACCESSION NUMBER: BTRIS Record Number 2938

ISSN: 00339016

AVAILABILITY: Railway Track and Structures; Subscription Department, RT&S, P.O. Box 956 ; Omaha; NE ; 68101-0986

PHOTOS: 6 Phot.

DATA SOURCE: UC Berkeley Transportation Library

ABSTRACT: Material handling machines are being design to be ever more versatil e as track time shrinks and efficiency and safety issues are even more pressing. A survey of some of the new products and enhanced versions of old ones in the field. New-generation cranes are lighter and have greater lifting capacity to allow the handling of heavier truck components without losing truck payload. More equipment has to be easily transported from job site to job site. Radio remote control systems create the ability to run complete track structure jobs from the cab of a single piece of equipment. Bulk spike reclaimers and handlers are another innovation. Self-powered slot machine enables more efficient use of track time. Machines that can quickly move on and off track are also popular. A portable wheeled dolly can be assembled on site to safely move damaged equipment. Its heaviest component is 70 lbs. A total of 11 suppliers are profiled.

DESCRIPTORS: Materials management; Ballast (Railroads); Maintenance of way; Loaders; Railroads

SUBJECT HEADING: R21 FREIGHT OPERATIONS

DIALOG(R)File 63:Transport Res(TRIS)

00939246 DA
TITLE: REMOTE CONTROL: TECHNOLOGY TRUMPS TRADITION
AUTHOR(S): Ytuarte, C
CORPORATE SOURCE: Simmons-Boardman Publishing Corporation, 345 Hudson Street, New York , NY, 10014,
JOURNAL: Railway Age Vol: 204 Issue Number: 3 Pag: pp 21-27
PUBLICATION DATE: 20030200 PUBLICATION YEAR: 2003
LANGUAGE: English SUBFILE: RRIS (R)
ISSN: 00338826
AVAILABILITY: Railway Age; Subscription Department, 345 Hudson Street ; New York ; NY ; 10014
ORDER NUMBER: N/A
ABSTRACT: Even though there are dozens of pilot programs currently running on Class I railroads throughout the United States along with years of documented success in Canada, remote control is still viewed by some as the future of safety and efficiency in the industry. It is also seen as driving a wedge between labor unions vying for its control. The article provides a view of the current situation that sees successful pilot programs, a new wave of technology, and labor conflicts that mark the widespread implementation of locomotive remote control in the U.S.
DESCRIPTORS: Remote control; Railroads; Technology assessment; Pilot studies; Safety; Labor unions; Productivity
SUBJECT HEADING: R06 SIGNALS, CONTROL AND COMMUNICATIONS

DIALOG(R)File 63:Transport Res(TRIS)

00938620 DA
TITLE: INDUSTRY OUTLOOK : THIS YEAR'S ECONOMY DIDN'T CATCH RAIL EXECS FLAT-FOOTED
AUTHOR(S): Stagl, J
CORPORATE SOURCE: Trade Press Publishing Corporation, 2100 West Florist Avenue , Milwaukee, WI, 53209-,
JOURNAL: Progressive Railroading Vol: 45 Issue Number: 12 Pag: pp 22-27
PUBLICATION DATE: 20021200 PUBLICATION YEAR: 2002
LANGUAGE: English SUBFILE: BTRIS; RRIS (B; R)
SOURCE ACCESSION NUMBER: BTRIS Record Number 2690
ISSN: 00330817
AVAILABILITY: Trade Press Publishing Corporation; 2100 West Florist Avenue ; Milwaukee; WI ; 53209-
PHOTOS: 1 Phot.
DATA SOURCE: UC Berkeley Transportation Library
ABSTRACT: The rail industry has been pushing growth where it can find it to offset losses. For example, U.S. freight railroads raised their intermodal and automotive shipments by roughly 4%, but grain dropped by the same amount. In Canada, intermodal and carloads were up about 10%, but grain fell 18.5%. Passenger lines have expanded in some places and increased ridership on some lines, but they had to raise fares and cut staff to meet the budget cuts from states. The next year, 2003, doesn't seem to be much better. For Class 1 railroads, increasing revenue is a

function of wooing customers to their lines with better service, rather than competing on rates. One line is replacing older locomotives to increase its reliability. As productivity is added, staff can be cut, reducing costs. Another hauler has created corridor products to attract regional shippers. Another is offering a guaranteed service and wireless tracking of individual shipments. To boost productivity they are using more remote-control locomotive units and creating bridge routes between different lines. With the economy still in decline, passenger lines are pinning new growth on bringing new riders on board, not just for commute trips but for other journeys.
DESCRIPTORS: Freight and passenger traffic; Railroads; Intermodal transportation; Railroad commuter service
SUBJECT HEADING: R18 ECONOMICS

DIALOG(R)File 63:Transport Res(TRIS)

00931325 DA
TITLE: GETTING OVER THE HUMP : PLANNING FOR INCREASED TRAFFIC'S RETURN, CLASS 1S TAP TECHNOLOGY TO IMPROVE HUMP YARD PRODUCTIVITY
AUTHOR(S): Kube, K
CORPORATE SOURCE: Trade Press Publishing Corporation, 2100 West Florist Avenue , Milwaukee, WI, 53209-,
JOURNAL: Progressive Railroading Vol: 45 Issue Number: 7 Pag: 2p
SUPPLEMENTAL NOTES: Page range: pp 50, 52
PUBLICATION DATE: 20020700 PUBLICATION YEAR: 2002
LANGUAGE: English SUBFILE: BTRIS; RRIS (B; R)
SOURCE ACCESSION NUMBER: BTRIS Record Number 2033
ISSN: 00330817
AVAILABILITY: Trade Press Publishing Corporation; 2100 West Florist Avenue ; Milwaukee; WI ; 53209-
PHOTOS: 1 Phot.
DATA SOURCE: UC Berkeley Transportation Library
ABSTRACT: Although activity at railroad hump yards has declined due to the overall decrease in rail traffic, railroads are nevertheless upgradi ng hump yard equipment in anticipation of a future business. New system s for improving car handling and coupling are being installed, and classification yards are being upgraded with enhanced automated car classification systems. Some yards are introducing locomotive remote control (LRC) systems to enhance productivity. Others are focusing on improved employee work practices and procedures.
DESCRIPTORS: Hump yards; Freight cars; Retarder control; Productivity SUBJECT HEADING: R21 FREIGHT OPERATIONS

DIALOG(R)File 63:Transport Res(TRIS)

00930354 DA
TITLE: GSM-R: THE KEY TO PAN-EUROPEAN RAILWAY MOBILE COMMUNICATIONS
AUTHOR(S): SARFATI, R
CORPORATE SOURCE: INTERNATIONAL RAILWAY CONGRESS ASSOCIATION, 85 RUE DE FRANCE, SECTION 10, BRUSSELS, B-1060, BELGIUM
JOURNAL: RAIL INTERNATIONAL Vol: 33 Issue Number: 5 Pag: 24-9
PUBLICATION DATE: 20020500 PUBLICATION YEAR: 2002
LANGUAGE: ENGLISH SUBFILE: IRRD (I)
IRRD DOCUMENT NUMBER: E114195
ISSN: 0020-8442
DATA SOURCE: Transport Research Laboratory (TRL)
ABSTRACT: GSM-R is based on the Global System for Mobile Communications standard, uses the same frequency band over the whole of Europe and includes all the functions offered by public GSM in addition to thos e specific to a railway operating environment. Its development and the deployment plan for Europe are outlined. GSM-R provides a single bas e for all evolving user needs, whether these are ground-to-train communication, operations or maintenance, shunting, works or corporate radio. New applications such as passenger information systems, on-board ticket issue, remote control of wagon preparation, telediagnostics for trains, and telemaintenance are envisaged.
DESCRIPTORS: Telecommunications; Railroad transportation; Maintenance; Passenger information systems; Administration; Rolling stock; Intelligent transportation systems; Public transit; Traffic control; Rail bound transport; Specification (Standard); Passenger information; Intelligent transport system; Public transport

DIALOG(R)File 63:Transport Res(TRIS)

00925254 DA
TITLE: REMOTE CONVERGENCE : LABOR, RETIREMENT LEGISLATION COMBINE TO PROVIDE FERTILE GROUND FOR CLASS 1 LOCOMOTIVE REMOTE-CONTROL IMPLEMENTATION
AUTHOR(S): Kube, K
CORPORATE SOURCE: Trade Press Publishing Corporation, 2100 West Florist Avenue , Milwaukee, WI, 53209-,
JOURNAL: Progressive Railroading Vol: 45 Issue Number: 4 Pag: pp 17-20
PUBLICATION DATE: 20020400 PUBLICATION YEAR: 2002
LANGUAGE: English SUBFILE: BTRIS; RRIS (B; R)
SOURCE ACCESSION NUMBER: BTRIS Record Number 1546
ISSN: 00330817
AVAILABILITY: Trade Press Publishing Corporation; 2100 West Florist Avenue ; Milwaukee; WI ; 53209-
PHOTOS: 3 Phot.
DATA SOURCE: UC Berkeley Transportation Library
ABSTRACT: Many factors are coming together that may enable Class I's to have much wider use of locomotive remote controls (LRCs), which railroads hope will boost their flat rate of safety and productivity improvements. The Federal Railroad Administration issued guidelines on LRC use; legislation was passed to encourage older workers to retire sooner; and a U.S. district court enjoined a major union from striki ng

over the issue of LRCs. The main operating unions, the United Transportation Union (UTU) and the Brotherhood of Locomotive Enginee rs (BLE), are taking slightly varying positions, with the UTU forging L RC agreements and the BLE throwing up roadblocks.
DESCRIPTORS: Remote control; Locomotives; Switching locomotives; Labor force; Retirement; Labor unions; Injuries; Training; Railroads SUBJECT HEADING: R11 ADVANCED SYSTEMS

00923624 DA
TITLE: WORLD OF WIRELESS : TO MEET RAILROADS' DESIRE FOR SAFETY, PRODUCTIVITY IMPROVEMENTS, SUPPLIERS INCREASE REAL-TIME INFORMATION OFFERINGS
AUTHOR(S): Kube, K
CORPORATE SOURCE: Trade Press Publishing Corporation, 2100 West Florist Avenue , Milwaukee, WI, 53209-,
JOURNAL: Progressive Railroading Vol: 45 Issue Number: 3 Pag: pp 14-20
PUBLICATION DATE: 20020300 PUBLICATION YEAR: 2002
LANGUAGE: English SUBFILE: BTRIS; RRIS (B; R)
SOURCE ACCESSION NUMBER: BTRIS Record Number 1438
ISSN: 00330817
AVAILABILITY: Trade Press Publishing Corporation; 2100 West Florist Avenue ; Milwaukee; WI ; 53209-
PHOTOS: 1 Phot.
DATA SOURCE: UC Berkeley Transportation Library
ABSTRACT: This article describes some of the wireless products and systems bei ng tested at the Association of American Railroads' Transportation Technology Center Inc. (TTCI) or in revenue service. Technologies include two-way links between dispatchers and maintenance of way workers, track monitoring devices, crossing monitors, locomotive tracking, scheduling, advanced train control, remote monitoring of h ot boxes, track heaters, track lubricators and other track devices, tunnel communications, railcar identification and on-train communications. Lists leading suppliers and their systems.
DESCRIPTORS: Wireless communication systems; Real time information; Automatic train control; Maintenance of way; Ride quality; Railroad grade crossings; Scheduling; Car location (Railroads); Monitoring; Automatic vehicle detection and identification systems; Communication based train control
SUBJECT HEADING: R17 INFORMATION SYSTEMS

DIALOG(R)File 63:Transport Res(TRIS)

00921312 DA
TITLE: COMING TO YOUR CLASS I: REMOTE CONTROL
AUTHOR(S): Ytuarte, C
CORPORATE SOURCE: Simmons-Boardman Publishing Corporation, 345 Hudson Street, New York , NY, 10014,
JOURNAL: Railway Age Vol: 203 Issue Number: 2 Pag: 3p
PUBLICATION DATE: 20020200 PUBLICATION YEAR: 2002
LANGUAGE: English SUBFILE: RRIS (R)
ISSN: 00338826
AVAILABILITY: Railway Age; Subscription Department, 345 Hudson Street ; New York ; NY ; 10014
ORDER NUMBER: N/A
ABSTRACT: The locomotive remote control technology industry has been struggling for acceptance in the U.S., and they achieved major strides toward the end of 2001 and early 2002. Until that time, the strong opposition toward the use of remote control technology came from the United Transportation Union and the Brotherhood of Locomotive Engineers. But. on 12 January 2002, the UTU agreed to join the Class I railroads in pilot projects using remote control technology in switching operations. The pilot program will develop statistics relating to the specific location and operator of the railroad, but that data allows examination of all the variables in the mix which includes individual railroad operation and geography, to determine the impact of remote control on safety, compensation, job security. and economics.
DESCRIPTORS: Remote control; Advanced vehicle control systems; Automatic train control; Labor unions; Labor agreements; Pilot studies; Railroads ; Safety; Salaries; Economic factors; Employment
SUBJECT HEADING: R06 SIGNALS, CONTROL AND COMMUNICATIONS

DIALOG(R)File 63:Transport Res(TRIS)

00914443 DA
TITLE: REMOTE CONTROL MARKETING
AUTHOR(S): BY JOHN GALLAGHER.
CORPORATE SOURCE: CANAC INTERNATIONAL, INC., CATTRON-THEIMEG, INC.,
JOURNAL: TRAFFIC WORLD,
SUPPLEMENTAL NOTES: TRAFFIC WORLD, V. 265, NO. 49 (DEC. 3, 2001), P. 29-30: ILL.
PUBLICATION DATE: 20011203 PUBLICATION YEAR: 2001
LANGUAGE: ENGLISH SUBFILE: TLIB (L)
DATA SOURCE: NORTHWESTERN UNIVERSITY TRANSPORTATION LIBRARY
ABSTRACT: SUBTITLE: CANAC MAY BE THREATENED BY UPSTART IN THE REMOTE CONTROL BUSINESS.
DESCRIPTORS: Railroads; Locomotives; Automatic train control; Train control

DIALOG(R)File 63:Transport Res(TRIS)
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00894954 DA
TITLE: UNTOUCHED BY HUMAN HANDS
AUTHOR(S): RIPLEY, ED.
JOURNAL: RAILNEWS,
SUPPLEMENTAL NOTES: RAILNEWS, NO. 425 (APR. 1999), P. 78-80: ILL.
PUBLICATION DATE: 19990400 PUBLICATION YEAR: 1999
LANGUAGE: ENGLISH SUBFILE: TLIB (L)
DATA SOURCE: NORTHWESTERN UNIVERSITY TRANSPORTATION LIBRARY
ABSTRACT: SUBTITLE: THE SAVINGS POTENTIAL OF CREWLESS LINE-HAUL OPERATIONS IS TOO GREAT TO IGNORE: REMOTE CONTROL OF TRAINS COULD BE THE RAILROADS' NE XT GREAT ADVANCE.
DESCRIPTORS: RAILROADS; RAILROADS; LOCOMOTIVES.; TRAIN CONTROL.

DIALOG(R)File 63:Transport Res(TRIS)
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00850037 DA
TITLE: COST EFFECTS OF RAILROAD TECHNOLOGY AND OPERATING PRACTICE CHANGES: THE CASE OF REMOTE-CONTROL LOCOMOTIVE TECHNOLOGY /
AUTHOR(S): SCHLENKER, MARTIN A.
JOURNAL: PROCEEDINGS OF THE TRANSPORTATION RESEARCH FORUM. -- SUPPLEMENTAL NOTES: PROCEEDINGS OF THE TRANSPORTATION RESEARCH FORUM. -- 35TH (1993), P. 117-128. ARLINGTON, VA.: TRF. --
PUBLICATION DATE: 19930000 PUBLICATION YEAR: 1993
LANGUAGE: ENGLISH SUBFILE: TLIB (L)
DATA SOURCE: NORTHWESTERN UNIVERSITY TRANSPORTATION LIBRARY
ABSTRACT: No abstract provided.
DESCRIPTORS: RAILROADS; RAILROADS; EQUIPMENT.; LOCOMOTIVES.

DIALOG(R)File 63:Transport Res(TRIS)
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00813869 DA
TITLE: WIRED AND WIRELESS COMMUTER TRAINS: A TRAINLINE DATA NETWORK IMPLEMENTATION ON A NORTH AMERICAN COMMUTER FLEET
AUTHOR(S): Holliday, CJ; Hooley, M; Woolsey, F
CORPORATE SOURCE: American Public Transportation Association, 1666 K Street, NW , Washington, DC, 20006-,
Pag: 5p
SUPPLEMENTAL NOTES: Full conference proceedings available on CD-ROM.
PUBLICATION DATE: 20010000 PUBLICATION YEAR: 2001
LANGUAGE: English SUBFILE: UMTRIS (U)
ISSN: N/A
AVAILABILITY: American Public Transportation Association; 1666 K Street, NW ; Washington; DC ; 20006-
ORDER NUMBER: N/A
ABSTRACT: A 27 point trainline system has been used with the North American commuter rail rolling stock for decades to communicate command and control of a pushing locomotive when controlling a push-pull commuter

train from a cab car. The same type of control system has also been used to control door systems as well as intercar voice communication for the passengers and the train crew. This paper explores the use of Local Area Networks (LANs) to rail passenger rolling stock. The New Jersey Transit's implementation of a data communications network on their locomotive hauled push-pull commuter trains is discussed. The paper also summarizes the technical approach to be used in implementing this new data network and the train to wayside remote diagnostics, and reviews the tie-in of the New Jersey project with IEEE and other industry standards.
CONFERENCE TITLE: Rail Transit Conference
CONFERENCE LOCATION: Boston, Massachusetts
CONFERENCE BEGIN DATE: 20010610
CONFERENCE END DATE: 20010614
CONFERENCE SPONSOR: American Public Transportation Association
DESCRIPTORS: Commuter service; Automatic control; Rail transit; Rolling stock; Push pull trains; Communication and control; Networks; Local area networks; Wayside signals; Remote control; Standards; New Jersey; New Jersey Transit
SUBJECT HEADING: U14 RAIL OPERATIONS TECHNOLOGY

DIALOG(R)File 63:Transport Res(TRIS)

00811776 DA
TITLE: DIGITAL RADIO SHOWS GREAT POTENTIAL FOR RAIL
AUTHOR(S): Guillaumin, B
CORPORATE SOURCE: Simmons-Boardman Publishing Corporation, 345 Hudson Street, New York , NY, 10014,
JOURNAL: International Railway Journal & Rapid Transit Rev Vol: 41
Issue Number: 5 Pag: pp 50-51
PUBLICATION DATE: 20010500 PUBLICATION YEAR: 2001
LANGUAGE: English SUBFILE: UMTRIS (U) ISSN: 07445326
AVAILABILITY: International Railway Journal & Rapid Transit Rev; Subscription Department, 345 Hudson Street; New York; NY; 10014
ORDER NUMBER: N/A
ABSTRACT: Radio has been used for voice communication by railroads for decades. But only recently have wireless communications been considered by the railroad industry as being able to perform multiple functions. This article discusses some of the applications available today, such as data transmission for monitoring and traffic control, vital information such as signaling, automatic train operation, and brake control, and video communications. The availability of digital radio transmission is recognized as the main reason for this communications revolution.
DESCRIPTORS: Signaling; Digital audio; Radio control; Remote control; Data communications; Traffic control; Automatic train operation; Brakes SUBJECT HEADING: U14 RAIL OPERATIONS TECHNOLOGY

DIALOG(R)File 63:Transport Res(TRIS)

00811062 DA
TITLE: THEY'RE JUST GUIDELINES : WILL FRA'S REMOTE CONTROL ADVISORY BE THE BENCHMARK RAILROADS, RAIL LABOR NEED AS THEY SEEK REMOTE-RELATED SAFETY, PRODUCTIVITY ANSWERS?
AUTHOR(S): Kube, K
CORPORATE SOURCE: Trade Press Publishing Corporation, 2100 West Florist Avenue , Milwaukee, WI, 53209-,
JOURNAL: Progressive Railroading Vol: 44 Issue Number: 4 Pag: pp 44-47
PUBLICATION DATE: 20010400 PUBLICATION YEAR: 2001
LANGUAGE: English SUBFILE: BTRIS; RRIS (B; R)
SOURCE ACCESSION NUMBER: BTRIS Record Number 270 ISSN: 00330817
AVAILABILITY: Trade Press Publishing Corporation; 2100 West Florist Avenue ; Milwaukee; WI ; 53209-
PHOTOS: 3 Phot.
DATA SOURCE: UC Berkeley Transportation Library
ABSTRACT: Describes dndustry reactions to the Federal Railroad Administration' s Feb. 14 Safety Advisory 2001-01, which lays out guidelines for operating locomotives by remote control. Areas that it covers includ e: design and operations; training; safety; inspections and tests; notification that remote control is in use; and changes in accident reporting to reflect incidents occurring during remote-control operations. Liability issues, labor relations and the willingness of Class 1's to switch to remote control remain major areas of uncertainty.
DESCRIPTORS: Locomotives; Remote control; Regulations; Railroad safety; U.S. Federal Railroad Administration
SUBJECT HEADING: R12 SAFETY

DIALOG(R)File 63:Transport Res(TRIS)

00808356 DA
TITLE: REMOTE CONTROL: IMPROVING SAFETY, BUILDING BUSINESS
AUTHOR(S): Luczak, M
CORPORATE SOURCE: Simmons-Boardman Publishing Corporation, 345 Hudson Street, New York , NY, 10014,
JOURNAL: Railway Age Vol: 202 Issue Number: 2 Pag: pp 36-39
PUBLICATION DATE: 20010200 PUBLICATION YEAR: 2001
LANGUAGE: English SUBFILE: RRIS (R) ISSN: 00338826
AVAILABILITY: Railway Age; Subscription Department, 345 Hudson Street ; New York ; NY ; 10014
ORDER NUMBER: N/A
ABSTRACT: Technological advances have made today's remote control a safer, more efficient alternative to traditional switching operations. Faced with economic downturn, railroads are looking for ways to improve efficiency, and an effective answer is to operate with locomotive remote control. More responsive customer service and more regular work assignments as well as rest patterns for trainmen are additional advantages of remote control.
DESCRIPTORS: Remote control; Locomotive operations; Safety; Customer service; Cost effectiveness
SUBJECT HEADING: R06 SIGNALS, CONTROL AND COMMUNICATIONS

DIALOG(R)File 63:Transport Res(TRIS)

00799838 DA
TITLE: CLOUDS GATHER ON TRANZ RAIL'S HORIZON
AUTHOR(S): LEITCH, D
CORPORATE SOURCE: SIMMONS-BOARDMAN PUBLISHING CORPORATION, 345 HUDSON STREET, NEW YORK, NY, 10014,
JOURNAL: INTERNATIONAL RAILWAY JOURNAL Vol: 40 Issue Number: 8 Pag: 31-2
PUBLICATION DATE: 20000800 PUBLICATION YEAR: 2000
LANGUAGE: English SUBFILE: IRRD (I)
IRRD DOCUMENT NUMBER: E106271 ISSN: 0744-5326
DATA SOURCE: Transport Research Laboratory (TRL)
ABSTRACT: This article reviews the last year's experience of New Zealand's Tranz Rail, and discusses some of its long-term problems. It has jus t had the highest rail freight levels in its history, achieved with decreasing staff numbers, now about 4000, so that its employee productivity has never been higher. New passenger and maritime equipment and services have been introduced, some rolling stock has been repaired or replaced, a revolutionary new remote control shunting system has been devised, and Tranz Rail's new ferries have been well received by passengers and freight shippers. M Beard took over as new chief executive in February 2000. However, many problems are emerging, despite all these recent successes. The fleet of electric locomotives is ageing and individual units have been refurbished at least once, but there are no plans for further rebuilding. Therefore, the strain of handling rising traffic is likely to increase. Freight rates are already under intense competitive pressure in New Zealand's deregulated economy, but rail operating costs can be expected to rise as world fuel prices affect them. Recent announcements for passenger trains only reschedule existing trains, and the new ferries face severe competition. There are severe conflicts between Tranz Rail's investment needs and its investors' expectations.
DESCRIPTORS: Public transit; Railroad transportation; Demand; Freight transportation; Equipment; Investments; Ships; Administration; Vehicles ; Deterioration; Repairing; Construction; Competition; Costs; New Zealand; Public transport; Rail bound transport; Demand (Econ); Freight transport; Repair

DIALOG(R)File 63:Transport Res(TRIS)

00795088 DA
TITLE: LONGER FREIGHT TRAINS: POSSIBILITIES AND LIMITATIONS
AUTHOR(S): VOGEL, H
CORPORATE SOURCE: INTERNATIONAL RAILWAY CONGRESS ASSOCIATION, 85 RUE DE FRANCE , BRUXELLES, B-1060, BELGIQUE
JOURNAL: RAIL INTERNATIONAL Vol: 31 Issue Number: 4 Pag: 22-7
PUBLICATION DATE: 20000400 PUBLICATION YEAR: 2000
LANGUAGE: English SUBFILE: IRRD (I)
IRRD DOCUMENT NUMBER: E105423 ISSN: 0020-8442
DATA SOURCE: Transport Research Laboratory (TRL)
ABSTRACT: Long heavy freight trains are in regular scheduled operation in Russia, the USA, Canada, Brazil, South Africa, and Australia. The

heaviest trains so far have had a gross load of 40,000t, and trains with 24,000t loads are not uncommon. Many trains are over 3km long. These railways usually separate freight and passenger traffic as far as possible, and use only bogie wagons to carry freight. The advantages of longer heavier trains include: (1) greater throughput and thus greater capacity on congested lines; (2) no need to build double tracks or passing tracks; and (3) savings in numbers of locomotives and locomotive drivers. This paper presents an investigation by Swiss Railways (CFF/SBB) of the possibility of placing longer freight trains in service on the north-south main lin e via the Gotthard Tunnel under the Alps. The reasons for the study were related to threatened congestion on part of the rail network an d the need to find more cost-effective freight transport. Aspects considered included journey times, traction, power supply and overhead lines, and signalling installations. The tests conducted showed that freight trains up to 1.5km long would be feasible if their individual wagons had relatively uniform braking properties; i t would be necessary to use locomotives remotely controlled by radio.

DESCRIPTORS: Freight transportation; Railroad transportation; Railroad trains; Transportation operations; International; Loads; Length; Vehicles; Drivers; Numbers; Research projects; Tests; Trip length; Braking; Switzerland; Freight transport; Rail bound transport; Train; Operations (Transp network); Decrease; Journey time

00794255 DA

TITLE: LOCOMOTIVE REMOTE CONTROL: A PRIZE JUST OUT OF REACH

AUTHOR(S): Miller, LS

CORPORATE SOURCE: Simmons-Boardman Publishing Corporation, 345 Hudson Street, New York , NY, 10014,

JOURNAL: Railway Age Vol: 200 Issue Number: 2 Pag: pp 24-28

PUBLICATION DATE: 19990200 PUBLICATION YEAR: 1999

LANGUAGE: English SUBFILE: RRIS (R)

ISSN: 00338826

AVAILABILITY: Railway Age; Subscription Department, 345 Hudson Street ; New York ; NY ; 10014

ORDER NUMBER: N/A

ABSTRACT: The article discusses the successes of Canadian railroads have achieved using locomotive remote control, and it examines the reasons why similar successes have not been possible in the United States railroad industry. Reasons discussed include safety and productivity as well as labor union concerns.

DESCRIPTORS: Locomotive operations; Remote control; Technology assessment; Railroad safety; Labor unions; Productivity; United States; Canada SUBJECT HEADING: R06 SIGNALS, CONTROL AND COMMUNICATIONS

DIALOG(R)File 63:Transport Res(TRIS)

00789355 DA
TITLE: NEW CONTROLS MAKE MORE THINGS REMOTELY POSSIBLE
AUTHOR(S): Matoba, K
CORPORATE SOURCE: Simmons-Boardman Publishing Corporation, 345 Hudson Street, New York , NY, 10014,
JOURNAL: Railway Track and Structures Vol: 95 Issue Number: 12 Pag: pp 22-24
PUBLICATION DATE: 19991200 PUBLICATION YEAR: 1999
LANGUAGE: English SUBFILE: RRIS (R)
ISSN: 00339016
AVAILABILITY: Railway Track and Structures; Subscription Department, RT&S, 1809 Capitol Avenue ; Omaha; NE ; 68102
ORDER NUMBER: N/A
ABSTRACT: Remote controls can make a job easier to accomplish and help save time and money. Today, remote controls are using the newest technologies to bring to the four primary uses in the railroad industry: locomotive control; maintenance-of-way machinery control; crane operation; and, track switching control. The article looks at some of the controls available today.
DESCRIPTORS: REMOTE CONTROL; TECHNOLOGICAL INNOVATIONS; LOCOMOTIVE OPERATION; MAINTENANCE EQUIPMENT; SWITCHES (RAILROADS); RAILROAD TRAFFIC CONTROL DEVICES
SUBJECT HEADING: R06 SIGNALS, CONTROL AND COMMUNICATIONS

DIALOG(R)File 63:Transport Res(TRIS)

00789353 DA
TITLE: SWITCH STANDS USING NEW TECHNOLOGY
AUTHOR(S): Matoba, K
CORPORATE SOURCE: Simmons-Boardman Publishing Corporation, 345 Hudson Street, New York , NY, 10014,
JOURNAL: Railway Track and Structures Vol: 95 Issue Number: 11 Pag: pp 17-19
PUBLICATION DATE: 19991100 PUBLICATION YEAR: 1999
LANGUAGE: English SUBFILE: RRIS (R)
ISSN: 00339016
AVAILABILITY: Railway Track and Structures; Subscription Department, RT&S, 1809 Capitol Avenue ; Omaha; NE ; 68102
ORDER NUMBER: N/A
ABSTRACT: Switch stands are a part of the railroad industry that has not changed much during the almost 200 years of the industry's existence. The article looks at the ways solar power, radio control and other advanced technologies are starting to replace the basic switch stand.
DESCRIPTORS: RAILROAD EQUIPMENT INDUSTRY; SWITCHES (RAILROADS); SOLAR ENERGY; RADIO CONTROL; TECHNOLOGICAL INNOVATIONS; REMOTE CONTROL SUBJECT HEADING: R06 SIGNALS, CONTROL AND COMMUNICATIONS

DIALOG(R)File 63:Transport Res(TRIS)

00767628 DA
TITLE: REMOTE SUPERVISION AND CONTROL SYSTEMS FOR ELECTRIFIED TRANSPORT POWER SUPPLY
AUTHOR(S): Negreanu, D; Rusan, M; Mitrea, A
Editor(s): Papageorgiou, M; Pouliezos, A
CORPORATE SOURCE: Elsevier Science, Limited, The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, England
REPORT NUMBER: Volume 3 Pag: pp 1157-61
PUBLICATION DATE: 19970000 PUBLICATION YEAR: 1997
LANGUAGE: English SUBFILE: UMTRIS; RRIS (U; R)
ISSN: N/A ISBN: 0080429319
AVAILABILITY: Elsevier Science, Incorporated; 660 White Plains Road ; Tarrytown; NY ; 10591-5153
ORDER NUMBER: N/A FIGURES: 1 Fig.
ABSTRACT: The paper highlights the importance of centralized control and monitoring of the electric power supply installations for electrified transport lines. The functions that have to be performed by such a system are defined. The system structure is presented both for the Power Dispatcher level and for the local stations level, as well as the communication protocols and the measures aimed at system reliability and security.
CONFERENCE TITLE: Transportation Systems 1997
CONFERENCE LOCATION: Chania, Greece
CONFERENCE BEGIN DATE: 19970616 CONFERENCE END DATE: 19970618
CONFERENCE SPONSOR: International Federation of Automatic Control; International Federation for Information Processing; and International Federation of Operational Research Societies.
DESCRIPTORS: REMOTE CONTROL; ELECTRIC POWER SUPPLY; ELECTRIC LOCOMOTIVES; SYSTEM DESIGN; COMMUNICATION AND CONTROL; RELIABILITY; SECURITY; SUBWAYS; TROLLEYBUSES; TROLLEY CARS
SUBJECT HEADING: U14 RAIL OPERATIONS TECHNOLOGY; R13 ELECTRIFICATION

DIALOG(R)File 63:Transport Res(TRIS)

00759554 DA
TITLE: WHERE'S THE REMOTE? AT A RAILROAD NEAR YOU
AUTHOR(S): Bell, J
CORPORATE SOURCE: Trade Press Publishing Corporation, 2100 West Florist Avenue , Milwaukee, WI, 53209-,
JOURNAL: Progressive Railroading Vol: 42 Issue Number: 1 Pag: pp 34-39
PUBLICATION DATE: 19990100 PUBLICATION YEAR: 1999
LANGUAGE: English SUBFILE: RRIS (R) ISSN: 00330817
AVAILABILITY: Trade Press Publishing Corporation; 2100 West Florist Avenue ; Milwaukee; WI ; 53209- ORDER NUMBER: N/A
ABSTRACT: With the exception of Canadian National Railway, North American Class I railroads have not been very aggressive about using remote control technology to operate locomotives. The reason given for this is that the process is being held up pending FRA action and also by organized labor, both of which cite safety concerns. The article discusses the ways remote control is presently being used by Class Is:

to control overhead cranes, maintenance-of-way equipment, hopper doors, and ballast operations. Remote controls are also being used by several U.S. short-line, regional and industrial railroads, particularly for switching and loading/unloading. Based on the experience of Canadian railroads, the industry spokespersons expect that the safety concerns will be relieved in the near future and FRA will allow full use of remote controls.
DESCRIPTORS: REMOTE CONTROL; ADVANCED VEHICLE CONTROL SYSTEMS; LOCOMOTIVE OPERATIONS; SWITCHES (RAILROADS); SWITCHING LOCOMOTIVES; MAINTENANCE OF WAY; MAINTENANCE EQUIPMENT; BALLAST (RAILROADS); HOPPER CARS; SAFETY
SUBJECT HEADING: R06 SIGNALS, CONTROL AND COMMUNICATIONS

DIALOG(R)File 63:Transport Res(TRIS)

00757690 DA
TITLE: UNCERTAINTY CLOUDS REMOTE CONTROL PICTURE
AUTHOR(S): Greenfield, MJ
CORPORATE SOURCE: Trade Press Publishing Corporation, 2100 West Florist Avenue , Milwaukee, WI, 53209-,
JOURNAL: Progressive Railroading Vol: 41 Issue Number: 8 Pag: pp 64-68
PUBLICATION DATE: 19980800 PUBLICATION YEAR: 1998
LANGUAGE: English SUBFILE: RRIS (R) ISSN: 00330817
AVAILABILITY: Trade Press Publishing Corporation; 2100 West Florist Avenue ; Milwaukee; WI ; 53209-
ORDER NUMBER: N/A
ABSTRACT: Portable radio remote controls have been on the market for decades; they are used to control equipment in application ranging from mines and steel mills to Broadway stage productions. Since 1996, Canadian National Railway has accumulated more than 1 million hours of experience operating locomotives by remote control in switching operations, and enjoying both safety and productivity benefits. The article looks at the FRA regulations that do not allow U.S. railroads to use the technology yet, but allows suppliers to continue to refine the remote control technology and aggressively market it outside the United States.
DESCRIPTORS: REMOTE CONTROL SYSTEMS; FEDERAL RAILROAD ADMINISTRATION; REGULATORY CONSTRAINTS; PORTABLE EQUIPMENT; REMOTE CONTROL LOCOMOTIVES; SAFETY; PRODUCTIVITY; ADVANCED TECHNOLOGY
SUBJECT HEADING: R06 SIGNALS, CONTROL AND COMMUNICATIONS

DIALOG(R)File 63:Transport Res(TRIS)

00615826 DA
TITLE: CONRAIL ROLLING WITH CELLULAR RADIO
CORPORATE SOURCE: Murphy-Richter Publishing Company, 2 North Riverside Plaza, Suite 1825, Chicago, IL, 60606,
JOURNAL: Progressive Railroading Vol: 34 Issue Number: 8 Pag: pp 65-66
PUBLICATION DATE: 19910800 PUBLICATION YEAR: 1991
LANGUAGE: English SUBFILE: UMTRIS; RRIS (U 9101; R)
ISSN: 00330817
AVAILABILITY: Progressive Railroading; 2 North Riverside Plaza, Suite 1825 ; Chicago; IL ; 60606
FIGURES: 2 Fig.
ABSTRACT: Consolidated Rail Corp. has joined the ranks of thousands of U.S. businesses that have found that cellular radio communications offer dramatic productivity enhancements to their day-to-day activities. Conrail is using a special cellular product in two unique communications applications: remote monitoring of the railroad's traffic control system and also for standby backup in the event of landline telephone service failure; and a pilot voice-link to locomotives to enhance customer service and streamline railroad operations.
DESCRIPTORS: RAIL TRANSPORTATION; TRAFFIC CONTROL SYSTEMS; COMMUNICATION SYSTEMS; RADIO COMMUNICATION SYSTEMS; REMOTE CONTROL SYSTEMS; TELEPHONE
SUBJECT HEADING: U17,NEW SYSTEMS & AUTOMATION TECHNOLOGY; U14,RAIL OPERATIONS TECHNOLOGY

DIALOG(R)File 63:Transport Res(TRIS)

00489784 DA
TITLE: INTERCITY 225: MAKING THE MK4
AUTHOR(S): Ford, R
CORPORATE SOURCE: Allan (Ian) Limited, Coombelands House, Addlestone, Weybridge, Sutton KT15 0HY, England
JOURNAL: Modern Railways Vol: 46 Issue Number: 493 Pag: 9p
PUBLICATION DATE: 19891000 PUBLICATION YEAR: 1989
LANGUAGE: English SUBFILE: RRIS (R)
ISSN: 00268356
AVAILABILITY: Skybooks International Incorporated; 48 East 50th Street ; New York ; NY ; 10022
PHOTOS: Phots.
ABSTRACT: A thorough presentation is given concerning the InterCity 225 MK4 project. Some of the features include: new locomotives which will consist of nine-car trains with six different vehicles and interdependent systems such as the multiplex remote control and monitoring equipment which interface with doorgear, passenger information and other facilities.
DESCRIPTORS: DESIGN FEATURES; PROCUREMENT; PASSENGER TRAINS; PROJECT MANAGEMENT; BOGIE
SUBJECT HEADING: H53,VEHICLE CHARACTERISTICS

DIALOG(R)File 63:Transport Res(TRIS)

00482665 DA
TITLE: MITSUBISHI ELECTRIC ADVANCE, VOL. 43, JUNE 1988, RAILWAY TRANSPORTATION EDITION
CORPORATE SOURCE: Mitsubishi Electric Corporation, Tokyo, Japan
Vol: 43 Pag: 37p
PUBLICATION DATE: 19880600 PUBLICATION YEAR: 1988
LANGUAGE: English SUBFILE: RRIS (R)
AVAILABILITY: National Technical Information Service; 5285 Port Royal Road ; Springfield; VA ; 22161
ORDER NUMBER: PB89-104798/WTS
DATA SOURCE: National Technical Information Service
ABSTRACT: The issue contains technical reports on: Overview: Trends in Railway technologies; New Guideway Transit Systems; Information and Communication Systems for Railways; Applications of Computer Systems to Railway Systems; A Train-Information Management System; Propulsion Systems for Railcars; A New Electric-Command Air-Brake System for Railcars; Remote-Control systems for Electric-Railway Power Networks; An Advanced Air-Conditioning System for Trains; Export-Model Electric Locomotives and Propulsion Equipment; R&D Progress Report: An Expert System for Train-Traffic Control; Technical Highlight: A Multisource Ionized-Cluster-Beam Deposition System for Superconducting Thin-Film Formation; New Products.
DESCRIPTORS: ELECTRIC RAILROADS; ELECTRIC RAILCAR; ELECTRONIC CONTROL; COMPUTER APPLICATIONS; AIR BRAKES; AIR CONDITIONING; REMOTE CONTROL; TECHNOLOGICAL INNOVATION; FOREIGN COUNTRIES
SUBJECT HEADING: H53,VEHICLE CHARACTERISTICS

DIALOG(R)File 63:Transport Res(TRIS)

00480787 DA
TITLE: ATCS ADVANCES IN CANADA
Editor(s): Miller, LS
CORPORATE SOURCE: Simmons-Boardman Publishing Corporation, 345 Hudson Street, New York , NY, 10014,
JOURNAL: Railway Age Vol: 190 Issue Number: 3 Pag: pp 41-43
PUBLICATION DATE: 19890300 PUBLICATION YEAR: 1989
LANGUAGE: English SUBFILE: RRIS (R) ISSN: 00338826
AVAILABILITY: Railway Age; Subscription Department, 345 Hudson Street ; New York ; NY ; 10014
ABSTRACT: The British Columbia line has been chosen as the first line to be installed with the second level of advanced train control systems (ATCS), Level 20. This level consists of a two-way communications link between the dispatchers and train crew as well as the installation of computer equipment on board the locomotive and at trackside. This will facilitate on-board display of track information and train movement authorities, and permit the on-board operation of remote controlled switches.
DESCRIPTORS: ON BOARD; TWO WAY COMMUNICATION; ADVANCED TRAIN CONTROL; BRITISH COLUMBIA, CANADA; TRACK INFORMATION; TRAIN MOVEMENTS; COMPUTER
SUBJECT HEADING: H53,VEHICLE CHARACTERISTICS

DIALOG(R)File 63:Transport Res(TRIS)

00478262 DA
TITLE: MITSUBISHI ELECTRIC ADVANCE, VOL. 43, JUNE 1988, RAILWAY TRANSPORTATION EDITION. TECHNICAL REPORT
CORPORATE SOURCE: Mitsubishi Electric Corporation, Tokyo, Japan
Pag: 37p PUBLICATION DATE: 19880000 PUBLICATION YEAR: 1988
LANGUAGE: English SUBFILE: UMTRIS (U 8801)
AVAILABILITY: National Technical Information Service; 5285 Port Royal Road ; Springfield; VA ; 22161 ORDER NUMBER: PB89-104798/XAB
DATA SOURCE: National Technical Information Service
ABSTRACT: The issue contains technical reports on: Overview: Trends in Railway Technologies; New Guideway Transit Systems; Information and Communication Systems for Railways; Applications of Computer Systems to Railway Systems; A Train-Information Management System; Propulsion Systems for Railcars; A New Electric-Command Air-Brake System for Railcars; Remote-Control Systems for Electric-Railway Power Networks; An Advanced Air-Conditioning System for Trains; Export-Model Electric Locomotives and Propulsion Equipment; R&D Progress Report: An Expert System for Train-Traffic Control; Technical Highlight: A Multisource Ionized-Cluster-Beam Deposition System for Superconducting Thin-Film Formation; New Products.
DESCRIPTORS: RAPID TRANSIT SYSTEM; ELECTRIC LOCOMOTIVES; AUTOMATED GUIDEWAY TRANSIT; PROPULSION SYSTEMS; EXPERT SYSTEM; INFORMATION SYSTEMS; COMPUTER APPLICATIONS
SUBJECT HEADING: U17,NEW SYSTEMS & AUTOMATION TECHNOLOGY

DIALOG(R)File 63:Transport Res(TRIS)

00371243 DA
TITLE: LIGHT MULTI-PURPOSE LOCOMOTIVE CLASS E 117 WITH THREE-PHASE CURRENT TECHNIQUE OF THE NORWEGIAN STATE RAILROADS - 2; LEICHTE UNIVERSALLOKOMOTIVEN EL 17 DER NORWEGISCHEN STAATSBAHN MIT DREHSTROMANTRIEBSTECHNIK - 2
AUTHOR(S): Reichelt, E
CORPORATE SOURCE: Verlag R Oldenbourg, Rosenheimer Strasse 145, Munich 80, West Germany
JOURNAL: Elektrische Bahnen Vol: 80 Issue Number: 8 Pag: pp 231-233
PUBLICATION DATE: 19820800 PUBLICATION YEAR: 1982 LANGUAGE: German
SUBFILE: UMTRIS (U 8301) SOURCE ACCESSION NUMBER: EIX830100013
AVAILABILITY: Linda Hall Library; 5109 Cherry Street; Kansas City; MO; 64110-2498 ORDER NUMBER: DOTL JC REFERENCES: 6 Ref.
DATA SOURCE: Engineering Index
ABSTRACT: This is part 2 of a paper, the first part of which was published in Elektrische Bahnen v 80 n 7, July 1982, p 207-214. In this part the blower of the traction motor and the auxiliary static frequency changer are described. Electronic control equipment is discussed. This includes the regulation of speed and remote control facilities.
DESCRIPTORS: LOCOMOTIVES (ELECTRIC); NORWAY; 00-A682; 00-A715; ELECTRIC LOCOMOTIVES; NORWEGIAN STATE RAILWAYS; MULTIPLEXING; ELECTRICAL POWER CONDITIONING; AC TRACTION MOTORS; PUSH PULL OPERATION SUBJECT HEADING: U13,RAIL VEHICLE TECHNOLOGY

DIALOG(R)File 63:Transport Res(TRIS)

00341544 DA
TITLE: SUBOPTIMAL CONTROL STRATEGIES FOR MULTILOCOMOTIVE POWER TRAINS
AUTHOR(S): Gruber, P; Bayoumi, M
CORPORATE SOURCE: Institute of Electrical and Electronics Engineers, 345 East 47th Street, New York, NY, 10017,
REPORT NUMBER: IEEE 80CH1563-6 Pag: pp 319-327
SUPPLEMENTAL NOTES: Proceedings of the IEEE Conference on Decision Control Incl Symposium Adaption Processes 19th, V1, Albuquerque, New Mexico, December 10-12, 1980.
PUBLICATION DATE: 19800000 PUBLICATION YEAR: 1980
LANGUAGE: English SUBFILE: RRIS (R 8201)
AVAILABILITY: Institute of Electrical and Electronics Engineers; Service Center, 445 Hoes Lane ; Piscataway; NJ ; 08854
REFERENCES: 13 Ref. DATA SOURCE: Engineering Index
ABSTRACT: This study introduces two different controllers for the handling of very long multipowered trains, including braking operations. The purpose of the controller is to minimize coupler force and velocity deviations from reference values due to grade changes and other disturbances. The controller is superimposed to a throttling and braking schedule known beforehand. As there are constraints on the inputs (especially the braking inputs) and the coupler forces that cannot be neglected, a linear control law cannot be applied straight-forward. Therefore a switching policy is chosen such that a piecewise linear system results. The linear suboptimal controllers acting between the switching moments are derived from two different small scale train models using standard optimal control design. One model represents a reduced order model of the long train, the other one uses a short train configuration consisting of fewer cars than the given train, where the cars however preserve the original characteristics. From the obtained weighting patterns a control law for the large scale system is derived.
DESCRIPTORS: TRAIN HANDLING; LONG TRAINS; SLACK ACTION; COUPLER FORCES; BRAKING PERFORMANCE; GRADE OPERATIONS; SLAVE LOCOMOTIVES; REMOTE CONTROL LOCOMOTIVES
SUBJECT HEADING: R02

DIALOG(R)File 63:Transport Res(TRIS)

00324401 DA
TITLE: LATEST DIESEL ELECTRIC LOCOMOTIVES AND DIESEL HYDRAULIC LOCOMOTIVES
AUTHOR(S): Watanabe, J; Mori, M; Hatakawa, I; Nakamori, K CORPORATE SOURCE: Hitachi Limited, 4-1 Marunouchi, Tokyo, Japan
JOURNAL: Hitachi Review Vol: 29 Issue Number: 1 Pag: pp 13-18
PUBLICATION DATE: 19800200 PUBLICATION YEAR: 1980 LANGUAGE: English
SUBFILE: RRIS (R 8101) SOURCE ACCESSION NUMBER: EIX801100112
AVAILABILITY: Linda Hall Library; 5109 Cherry Street ; Kansas City; MO ; 64110-2498 DATA SOURCE: Engineering Index
ABSTRACT: Principal specifications and description of technological innovations are given for the latest diesel electric locomotives and industrial diesel hydraulic locomotives. The latter are serialized by

the classes: low noise type, semiexplosion type, very low speed type, automatic train operating type and automatic inspection and monitoring devices.
DESCRIPTORS: LOCOMOTIVES (DIESEL); 00-A682; LOCOMOTIVE DESIGN; DIESEL ELECTRIC LOCOMOTIVES; DIESEL HYDRAULIC LOCOMOTIVES; REMOTE CONTROL; JAPANESE TECHNOLOGY
SUBJECT HEADING: R03

DIALOG(R)File 63:Transport Res(TRIS)
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00322577 DA
TITLE: U.S. MINES LOOK TO AUTOMATED RAILS
AUTHOR(S): Mighdoll, P
CORPORATE SOURCE: McGrawHill, Incorporated, 1221 Avenue of the Americas, New York, NY , 10020,
JOURNAL: Coal Age Vol: 85 Issue Number: 4 Pag: pp 90-94
PUBLICATION DATE: 19800400 PUBLICATION YEAR: 1980 LANGUAGE: English
SUBFILE: RRIS (R 8101) AVAILABILITY: Linda Hall Library; 5109 Cherry Street; Kansas City; MO; 64110-2498 DATA SOURCE: Engineering Index
ABSTRACT: An overview is given of the automated coal-mine rail haulage in the U.S., and the safety benefits it promises. Studies have found driverless trains and automatic loading and dumping to be commercially attractive and technically feasible. The design of automated rail haulage in underground coal mines is discussed in some detail.
DESCRIPTORS: MINE HAULAGE; AUTOMATIC TRAIN OPERATION; REMOTE CONTROL LOCOMOTIVES; AUTOMATION; LOADING AND UNLOADING OPERATIONS; COAL MINING
SUBJECT HEADING: R21

DIALOG(R)File 63:Transport Res(TRIS)
(c) fmt only 2003 Dialog Corp. All rts. reserv.

00316524 DA
TITLE: STRUCTURAL CHANGE IN SIGNALLING AND TELECOMMUNICATIONS TECHNIQUES; STRUKTURWANDEL IN DER SIGNAL- UND FERNMELDETECHNIK
AUTHOR(S): Wehner, L
CORPORATE SOURCE: Tetzlaff-Verlag GmbH, Havelstrasse 9, Postfach 4006, 6100 Darmstadt 1, West Germany
JOURNAL: Signal und Draht Vol: 72 Issue Number: 1-2 Pag: pp 3-12
PUBLICATION DATE: 19800100 PUBLICATION YEAR: 1980 LANGUAGE: German
SUBFILE: RRIS (R 8002) AVAILABILITY: Tetzlaff-Verlag GmbH; Havelstrasse 9, Postfach 4006; 6100 Darmstadt 1; West Germany
PHOTOS: 9 Phot. DATA SOURCE: International Union of Railways, BD
ABSTRACT: Microelectronics are bringing about radical changes in signalling and communications techniques on the German Federal Railway. The author describes present developments, and indicates probable future trends in the following areas: block systems, signal boxes, centralized remote control, control of shunting operations, regulating and driving techniques, the information network, radio on board trains, telecommunications installations, information and warning systems, telex techniques, office management and modernized ticket sales.
DESCRIPTORS: SIGNALING; TELECOMMUNICATION; MICROPROCESSOR; CENTRALIZED TRAFFIC CONTROL; GERMAN FEDERAL RAILWAY; BLOCK SYSTEMS; AUTOMATIC TRAIN OPERATION; TRAIN RADIO; INFORMATION SYSTEMS SUBJECT HEADING: R06

DIALOG(R)File 63:Transport Res(TRIS)

00312414 DA
TITLE: THE CARTIER RAILWAY: HEAVY HAUL UNDER CONTROL
CORPORATE SOURCE: Murphy-Richter Publishing Company, 20 North Wacker Drive, Chicago , IL, 60606,
JOURNAL: Progressive Railroading Vol: 23 Issue Number: 4 Pag: pp 57-61
SUPPLEMENTAL NOTES: Title is for lead article. The others: Heavy Duty Track, p. 65; Cycled Maintenance: a Heavy Haul Asset, p. 71: and Electronics Sparks Heavy Haul, p. 77.
PUBLICATION DATE: 19800400 PUBLICATION YEAR: 1980 LANGUAGE: English
SUBFILE: RRIS (R 8002) AVAILABILITY: Murphy-Richter Publishing Company; 20 North Wacker Drive; Chicago ; IL ; 60606
ORDER NUMBER: DOTL JC PHOTOS: 6 Phot.
ABSTRACT: Four articles describe the operation and maintenance of this Canadian heavy-haul railway. Built 20 years ago, the 276-mile line has experienced steady traffic growth in iron ore and has refined preventive maintenance and upgraded cars, locomotive and track. Its unit trains are handled by 2-man crews and normally involve remotely-controlled pusher units operating through a region with much snow and sub-zero temperatures. Train performance is closely monitored to achieve maximum effectiveness from 2000 cars and 54 locomotives producing 10 billion gross ton miles annually. Cartier is now converting to continuous welded rail, bridges are being improved with ballast decks, and rail grinder now controls corrugations. Cars and locomotives are cycled through the maintenance shop on precise schedule. Centralized traffic control and radio have been used from beginning; original CTC is now being supplemented by a new microprocessor which stores information on track occupancy and identifies trains. Computer is also used to process other operating information.
DESCRIPTORS: HEAVY HAUL RAILWAYS; CANADA; CARTIER RAILWAY; IRON ORE TRAFFIC ; OPERATING STRATEGIES; TRACK MAINTENANCE; RAIL WELDING; COLD WEATHER OPERATIONS; FREIGHT CAR MAINTENANCE; OPEN TOP CARS; UNIT TRAINS; SLAVE LOCOMOTIVES; CENTRALIZED TRAFFIC CONTROL; MICROPROCESSOR; COMPUTER APPLICATIONS
SUBJECT HEADING: R21

DIALOG(R)File 63:Transport Res(TRIS)

00311423 DA
TITLE: INDUSTRIAL CAR MOVERS: NEW POWER IN AN OLD PACKAGE
Editor(s): Armstrong, JH
CORPORATE SOURCE: Simmons-Boardman Publishing Corporation, 508 Birch Street , Bristol , CT, 06010,
JOURNAL: Railway Age Vol: 181 Issue Number: 5 Pag: pp 25-26
PUBLICATION DATE: 19800310 PUBLICATION YEAR: 1980
LANGUAGE: English SUBFILE: RRIS (R 8002)
AVAILABILITY: Linda Hall Library; 5109 Cherry Street; Kansas City; MO; 64110-2498
ORDER NUMBER: DOTL JC PHOTOS: 2 Phot.
ABSTRACT: A remotely controlled motive power unit, the car mover, is produced by rebuilding and repowering retired switching locomotives with a high-speed industrial engine and new controls. All input signals

are based on an integral digital radio control with safety features. Solid-state miniaturized electronic units replace conventional contactors and the pneumatic system uses miniature magnet valves. Customers include industries, mines, utilities and possibly short-line railroads.
DESCRIPTORS: LOCOMOTIVE DESIGN; CAR MOVERS; REMOTE CONTROL LOCOMOTIVES; RADIO REMOTE CONTROL; ELECTRONIC CONTROL; DIESEL ELECTRIC LOCOMOTIVES; INDUSTRIAL RAILROADS; RELIABILITY; MAINTAINABILITY
SUBJECT HEADING: R04

DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

09508310 Genuine Article#: 412XT Number of References: 0
Title: Remote-controlled locomotive switching
Author(s): DeGaspari J
Journal: MECHANICAL ENGINEERING, 2000, V122, N10 (OCT), P30-+
ISSN: 0025-6501 Publication date: 20001000
Publisher: ASME-AMER SOC MECHANICAL ENG, THREE PARK AVE, NEW YORK, NY 10016-5990 USA
Language: English Document Type: NEWS ITEM
Journal Subject Category: ENGINEERING, MECHANICAL

DIALOG(R)File 65:Inside Conferences

02463292 INSIDE CONFERENCE ITEM ID: CN025724322
Application of Locomotive Radio Remote Control Technique to Heavy Haul Combined Train in Mountainous Region
Lin, T.; Ma, S.; Lu, W.; Xiao, K.
CONFERENCE: International heavy haul railway conference-5th
INTERNATIONAL HEAVY HAUL RAILWAY CONFERENCE, 1993; 5th P: 102-109 (np), 199?
LANGUAGE: English DOCUMENT TYPE: Conference Papers
CONFERENCE LOCATION: Beijing
CONFERENCE DATE: Jun 1993 (199306) (199306)
BRITISH LIBRARY ITEM LOCATION: 4540.721700
DESCRIPTORS: heavy haul railway; railway

DIALOG(R)File 99:Wilson Appl. Sci & Tech Abs

0546717 H.W. WILSON RECORD NUMBER: BAST84039594
Remote control of traction power over two wires
Avery, C. R; Crawshaw, G
IEE Proceedings. Part B, Electric Power Applications v. 131 (July '84) p. 133-40 DOCUMENT TYPE: Feature Article ISSN: 0143-7038 LANGUAGE: English
RECORD STATUS: New record

DESCRIPTORS: Electric locomotives--Control; Electronic control;

DIALOG(R)File 144:Pascal

15173481 PASCAL No.: 01-0337939
Der Cargo-Shuttle: eine Loesung zur Effektivitaetssteigerung im Tfz-Einsatz
(Le Cargo-Shuttle : une solution pour une utilisation plus efficace des engins moteurs)
(Cargo Shuttle : enhancing the efficiency of traction deployment)
LANGE Bernd
Abteilung TZL 2 (System V-Lok) im Forschungs-und Technologiezentrum der DB AG, Dessau, Germany
Journal: Der Eisenbahningenieur : (Hamburg), 2001, 52 (7) 41-44
ISSN: 0013-2810 CODEN: ESBGAP Availability: INIST-8892; 354000095583060080
Document Type: P (Serial) ; A (Analytic)
Country of Publication: Germany
Language: German Summary Language: French; English
L'on entend par "Systeme Cargo-shuttle" la telecommande des locomotives, incorporees dans un train de marchandises, par le conducteur ou le chef de manoeuvre a partir de la locomotive menante ou le vehicule-pilote. Outre la possibilite de repartir la puissance motrice dans le train, ce procede permet aussi une conduite semblable a la reversibilite. Pour les besoins de la manoeuvre et la mise a disposition, chaque locomotive peut etre telecommandee separement.

English Descriptors: Rail transportation; Railway industry; Freight transportation; Remote control; Locomotive; Control system; Engine power; System description; Technical information; Implementation
French Descriptors: Transport ferroviaire; Construction ferroviaire; Transport marchandise; Telecommande; Locomotive; Systeme commande; Puissance moteur; Description systeme; Information technique; Implementation
Classification Codes: 001D15D

DIALOG(R)File 144:Pascal

14311420 PASCAL No.: 99-0518409
Mehrfachfunkfernsteuerung von Lokomotiven im Zugverband
(Telecommande de plusieurs locomotives dans un train)
(Multiple radio remote control of locomotives in a train formation)
HOERL F
Forschungs-und Technologie-Zentrum der Deutschen Bahn AG, Germany
Journal: ETR. Eisenbahntechnische Rundschau, 1999, 48 (10) 668-674
ISSN: 0013-2845 Availability: INIST-12075; 354000088094600050
No. of Refs.: 1 ref.
Document Type: P (Serial) ; A (Analytic)
Country of Publication: Germany
Language: German Summary Language: English; French; Spanish
L'une des orientations des reseaux de transport de marchandises vise a augmenter la rentabilite de l'ensemble du systeme par un recours accru a la technique jusqu'a l'automatisation et la creation de systemes de production flexibles. Dans le cadre du projet pilote Telecommande de plusieurs locomotives dans un train , le Centre de recherche et de technologie de la DB

AG a Munich etudie actuellement la traction de trains de marchandises tres longs et lourds par plusieurs locomotives reparties dans le train. Ce type de telecommande relie par radio jusqu'a cinq locomotives, afin de pouvoir telecommander et surveiller, a partir de la locomotive de tete occupee par le conducteur, celles qui sont reparties sans conducteur dans le train. L'article presente, outre l'objectif de projet pilote, le montage du systeme de telecommande de plusieurs locomotives dans un train pour le cas de la locomotive de la serie 232, il decrit les composants et les interfaces ainsi que le deroulement des essais.

English Descriptors: Rail transportation; Goods traffic; Traffic management ; Remote control; Transportation network; Managerial optimization; Automation; Locomotive; Railroad electric traction; Pilot operation; Performance requirement; Functional analysis; Monitoring control system; Performance characteristic; Braking
French Descriptors: Transport ferroviaire; Trafic marchandise; Gestion trafic; Telecommande; Reseau transport; Gestion optimale; Automatisation; Locomotive; Traction electrique ferroviaire; Operation pilote; Critere performance; Analyse fonctionnelle; Systeme controle commande; Caracteristique fonctionnement; Freinage
Classification Codes: 001D15D

DIALOG(R)File 144:Pascal

14175096 PASCAL No.: 99-0373582
Une revolution pour le fret : Le frein a commande electronique et la telecommande des locomotives par radio
Numero special Recherche. 2e partie
(A revolution for freight trains : Electronically controlled brakes and radio remote-controlled locomotives)
GUIGON M
CAMBILLAU Gerard, ed
Unite de Recherche des Activites Fret, France
Journal: Revue generale des chemins de fer : (1924), 1999 (6) 27-33, 46 (8 p.)
ISSN: 0035-3183 CODEN: RGCFAI Availability: INIST-351; 354000085569470040
Document Type: P (Serial) ; A (Analytic)
Country of Publication: France
Language: French Summary Language: English; German
L'evolution de productivite des trains de fret passe par l'accroissement de la longueur, de la charge et de la vitesse des trains. Deux projets de recherche se deroulent au sein de la SXCF: - Le frein a commande electronique qui permet de faire circuler des trains tres longs (de plus de deux kilometres) en respectant les distances d'arret actuelles et les distances darret aclueles et en ne creant pas d'efforts internes dans le train susceptibles de provoquer un deraillement. En outre, ce systeme ameliore la securite des circulations des trains par la connaissance en temps reel de l'etat de fonetionnement des systemes de freinage et facilite leur exploitation avec la realisation de l'essai de frein a agent seul. - La telecommande des locomotives par radio qui permet le jumelage de deux trains pour creer un train dont la longueur peut atteindre 1 500 m afin de reduire les couts de conduite et de repousser les limites de saturation des

infrastructures. Les recherches portent principalement sur les conditions de circulation en securite et sur la liaison radio entre les locomotives qui tient compte de la circulation dautres trains.

English Descriptors: Rail transportation; Research program; France; Locomotive; System description; Brake; Electronic control; Remote control ; Freight; Experience; Radio transmission; Feasibility; Exploitation; Real time; Traffic safety
Broad Descriptors: Europe; Europe; Europa
French Descriptors: Transport ferroviaire; Programme recherche; France; Locomotive; Description systeme; Frein; Commande electronique; Telecommande; Fret; Experience; Radiotransmission; Faisabilite; Exploitation; Temps reel; Securite trafic
Classification Codes: 001D15D

DIALOG(R)File 144:Pascal

14174392 PASCAL No.: 99-0372813
Numero special Recherche. 2e partie
CAMBILLAU Gerard, ed
Journal: Revue generale des chemins de fer : (1924), 1999 (6) (42 p.)
ISSN: 0035-3183 CODEN: RGCFAI Availability: INIST-351; 354000085569470000
No. of Refs.: dissem.
Document Type: P (Serial) ; M (Monographic)
Country of Publication: France
Language: French Summary Language: English; German
Ce deuxieme numero special sur la recherche dans les transports ferroviaires presente plus particulierement : le traitement des nuisances olfactives par photocatalyse et charbon actif dans les stations de metro et tunnels de metro, la recherche a la SNCF pour la reduction du bruit dans les trains, la localisation par satellite pour les vehicules ferroviaires, la revolution pour le fret qu'est le frein a commande electronique et la telecommande des locomotives par radio, et l'utilisation du traitement d'images pour l'evaluation de la disponibilite des satellites GPS le long d'une voie de chemin de fer.

English Descriptors: Rail transportation; Research program; France; Method study; Noise pollution; Noise reduction; Odor; Localization; Satellite; Brake; Electronic control; Remote control; Image processing; GPS system
Broad Descriptors: Europe; Europe; Europa
French Descriptors: Transport ferroviaire; Programme recherche; France; Etude methode; Nuisance acoustique; Reduction bruit; Odeur; Localisation; Satellite; Frein; Commande electronique; Telecommande; Traitement image; Systeme GPS
Classification Codes: 001D15D

DIALOG(R)File 144:Pascal

13884549 PASCAL No.: 99-0063577
Des locomotives de pousse telecommandees par radio : Pour les trains de fret de la ligne du Gothard
(Pushing locomotives operated by radio: for freight trains of the Gothard line)
VILFROY A
SBB Direktion Traktion und Zugdienste, Germany
Journal: Rail international : (Ed. francaise), 1998, 29 (11) 28-31
ISSN: 1022-4076 CODEN: RAIIAF Availability: INIST-14591; 354000073176060050
Document Type: P (Serial) ; A (Analytic)
Country of Publication: Belgium
Language: French

English Descriptors: Rail transportation; Locomotive; Freight transportation; Monitoring control system; Remote control; Radio transmission; Equipment; Exploitation; User service; System description; Performance characteristic; Experience; Switzerland; Thrust Broad Descriptors: Europa; Europe; Europe; Europa
French Descriptors: Transport ferroviaire; Locomotive; Transport marchandise; Systeme controle commande; Telecommande; Radiotransmission; Equipement; Exploitation; Service utilisateur; Description systeme; Caracteristique fonctionnement; Experience; Suisse; Poussee
Classification Codes: 001D15D

DIALOG(R)File 144:Pascal

12442166 PASCAL No.: 96-0098956
Bremssysteme und deren Komponenten fuer Triebfahrzeuge der nichtbundeseigenen Eisenbahnen
(Brake systems and their components for the motive power units of nonfederal railways)
KRUTSCHEKE S
Verkehrsbetriebe Peine-Salzgitter GmbH, 38229 Salzgitter, Federal Republic of Germany
Journal: ZEV, DET, Glasers Annalen, Die Eisenbahntechnik, 1995, 119 (11-12) 513-517
ISSN: 0941-0589 Availability: INIST-4155; 354000052502540020
No. of Refs.: 8 ref.
Document Type: P (Serial) ; A (Analytic)
Country of Publication: Federal Republic of Germany
Language: German Summary Language: English; French
Le circuit regulateur homme/machine decisif pour la conduite des engins de traction est interrompu par l'introduction de la commande a distance par radio aupres des chemins de fer publics et non-publics, car dans le cas de la commande a distance l'engin de traction est condult le plus souvent a partir d'un endroit situe en dehors de la cabine de conduite. Les capacites sensorielles de l'homme dont on a tire profit jusqu'ici, ne jouent plus aucun role. Une des consequences qui en resulte est la necessite d'adapter

les systemes de freinage et leurs composants des engins de traction des chemins de fer non federaux a la nouvelle facon de conduire. L'article decrit les solutions qu'on a trouvees et les reglements actuellement valables pour les systemes de freinage adaptes et leurs composants sur les engins de traction non-federaux en prenant en consideration l'aspect de l'acces libre a l'infrastructure des chemins de fer federaux.

English Descriptors: Braking; Control system; Remote control; Railroad traction; Railway industry
French Descriptors: Freinage; Systeme commande; Telecommande; Traction ferroviaire; Construction ferroviaire
Classification Codes: 001D11I04D; 240

DIALOG(R)File 144:Pascal

12289105 PASCAL No.: 95-0521461
Robotique et locomotives a vapeur: un court passe mais (peut-etre) un grand avenir
(Robotics and steam locomotives : a short past, but (maybe) a great future)
PENNANEAC'H M; COMBE J M; GUILLY J
COIFFET Philippe, ed
Inst. univ. technologie, 18020 Bourges, France; Musee francais chemin fer , 68200 Mulhouse, France
Cent. robotique Ile de France CRIIF, 75229 Paris, France
Productique robotique du Sud Europe Atlantique. Colloque international, 1 (Bourges FRA) 1995-06-01
Journal: Revue d'automatique et de productique appliquees, 1995, 8 (2-3) 497-502
ISSN: 0990-7009 Availability: INIST-22118; 354000050792990530
No. of Refs.: 10 ref.
Document Type: P (Serial); C (Conference Proceedings) ; A (Analytic)
Country of Publication: France
Language: French Summary Language: English
On ne peut pas, a proprement parler lorsque l'on traite des locomotives a vapeur, utiliser les termes de robotisation et de robotique. Neanmoins on peut citer deux exemples de mecanisations qui leur furent appliquees et des projets recents americains qui font appel aux microprocesseurs.

English Descriptors: Railroads; Railroad transportation; Robotics; Locomotives; Vapors; Mechanization; Remote control; Case study
French Descriptors: Chemin de fer; Transport ferroviaire; Robotique; Locomotive; Vapeur; Mecanisation; Telecommande; Etude cas
Classification Codes: 001D15D

DIALOG(R)File 144:Pascal

12030453 PASCAL No.: 95-0223243
Telecommande par radio de locomotives en unite-multiple tractant des trains lourds
(Radio remote control of unit-multiple locomotive with heavy trains traction)
BORET D
SNCF, direction materiel, France
Journal: L'Ingenieur constructeur ETP, 1995 (429-30) 24-26
ISSN: 0046-9513 CODEN: IGTPBZ Availability: INIST-19246; 354000059676750040
Document Type: P (Serial) ; A (Analytic)
Country of Publication: France
Language: French

English Descriptors: Rail transportation; Railway vehicle equipment; Industrial locomotive; Electric traction; Remote control; Radiotransmission; Optimization; Technical staff; Performance
French Descriptors: Transport ferroviaire; Equipement vehicule ferroviaire; Locomotive industrielle; Traction electrique; Telecommande; Radiocommunication; Optimisation; Personnel technique; Performance
Classification Codes: 001D15D

DIALOG(R)File 144:Pascal

11543403 PASCAL No.: 94-0425572
Leistungsstarke Dieselrangierlokomotiven
(High power diesel shunting engines)
STECKER W
Bundesbahn-Zentralamt, Muenchen, Federal Republic of Germany
Journal: Eisenbahningenieur, 1993, 44 (8) 517-527 (7 p.)
ISSN: 0013-2810 CODEN: ESBGAP Availability: INIST-8892; 354000035145370050
Document Type: P (Serial) ; A (Analytic)
Country of Publication: Federal Republic of Germany
Language: German Summary Language: English; French

English Descriptors: Engines; Diesel engine; Locomotive; Marshalling yard; Remote control; Operating system
French Descriptors: Engin moteur; Moteur diesel; Locomotive; Gare triage; Telecommande; Systeme exploitation
Classification Codes: 001D15D

DIALOG(R)File 144:Pascal

10744178 PASCAL No.: 93-0253521
Rationelle Betriebsfuehrungsverfahren und -techniken beim Rangieren
(Rational operating methods and techniques in marshalling yards)
THIELE H
Verkehrsbetriebe Peine-Salzgitter GmbH, 3320 Salzgitter, Federal Republic of Germany
Journal: ETR. Eisenbahntechnische Rundschau, 1991, 40 (8) 497-500
ISSN: 0013-2845 Availability: INIST-12075; 354000028472190030
Document Type: P (Serial) ; A (Analytic)
Country of Publication: Federal Republic of Germany
Language: German Summary Language: English; French; Spanish

English Descriptors: Rail transportation; Railway; Traffic management; Locomotive; Railroad switch; Control system; Running of trains; Automation; Remote control; Radio; Performance evaluation; Ergonomics; Maneuver
French Descriptors: Transport ferroviaire; Chemin de fer; Gestion trafic; Locomotive; Aiguillage; Systeme commande; Circulation trains; Automatisation; Telecommande; Radio; Evaluation performance; Ergonomie; Aiguille a manoeuvre electrique; Commande radio; Manoeuvre locomotive; Manoeuvre
Classification Codes: 001D15D

DIALOG(R)File 144:Pascal

08844072 PASCAL No.: 90-0011935
SIG L90 Sicherungs- und Steuerungssystem mit integrierter Gleisfreimeldung
(SIG L90-Systeme de securite et de commande a dispositif integre de controle de liberation des voies)
(SIG L90 security and control system with integrated track release indication)
UEBEL H
Standard Elektrik Lorenz A.G., Stuttgart 7000, Federal Republic of Germany
Journal: ETR Eisenbahntechnische Rundschau, 1989, 38 (7-8) 453-456
ISSN: 0013-2845 Availability: CNRS-12075 No. of Refs.: 1 ref.
Document Type: P (Serial) ; A (Analytic)
Country of Publication: Federal Republic of Germany
Language: German Summary Language: English; French; Spanish
Le present article decrit le concept d'exploitation et les composantes du systeme simplifie de signalisation SIG L90 pour lignes a trafic faible a modere. Une utilisation economique du systeme est possible notamment du fait qu'un regulateur central peut assurer la commande de l'ensemble de la ligne avec une installation de telecommande qui n'a pas besoin d'etre de securite en matiere de signalisation, et qu'il n'est pas necessaire de recourir au systeme radio sol-train
English Descriptors: Railway signalling; Remote control; West Germany; Traffic safety; Microcomputer
Broad Descriptors: Germany; Europe; Allemagne; Europe; Alemania; Europa
French Descriptors: Signalisation ferroviaire; Telecommande; Allemagne(republique federale); Securite trafic; Microordinateur
Classification Codes: 001D15D

DIALOG(R)File 144:Pascal

08057249 PASCAL No.: 88-0057327
Funkferngesteuerte Abdrueckeinheiten fuer den Gefaellerangierbahnhof Nuernberg
(Unites de debranchement a telecommande radio pour le triage par gravite de Nuremberg)
(Radio-controlled humping units for the multi-level marshalling yard at Nuernberg)
THOMAS K
Journal: ETR Eisenbahntechnische Rundschau, 1987, 36 (9) 561-568
ISSN: 0013-2845 Availability: CNRS-12075
No. of Refs.: 4 ref.
Document Type: P (Serial) ; A (Analytic)
Country of Publication: Federal Republic of Germany
Language: German Summary Language: ENGLISH; FRENCH; Spanish
Description du systeme de triage par gravite automatique commande par ordinateur et d'equipement de manoeuvre moderne qui a fait du chantier de Nuremberg un triage hautement performant

English Descriptors: Remote control; Sorting; Gravity; Automatic control; Computer aid; Control equipment; Marshalling yard; Locomotive
French Descriptors: Telecommande; Triage; Gravite; Commande automatique; Assistance ordinateur; Equipement commande; Gare triage; Locomotive; Nuremberg; Wagon frein
Classification Codes: 001D15D

DIALOG(R)File 144:Pascal

07786165 PASCAL No.: 87-0265823
Der Einsatz von Funkfernsteuerungen bei Rangierlokomotiven
(Radio control systems for shunting engines)
ZOELLE G; FINGER KH; KRUTSCHKE S; HAINKE P
Thyssen Henrichshuette, Hattingen, Federal Republic of Germany
Journal: Stahl Eisen, 1986-08-11, 106 (16) 830-834
ISSN: 0340-4803 No. of Refs.: 3 ref.
Document Type: P (Serial) ; A (Analytic)
Country of Publication: Federal Republic of Germany Language: German
Uebersicht ueber die im In- und Ausland im Einsatz befindlichen Funkfernsteuerungsanlagen bei Rangierlokomotiven; Gewicht und Groesse des vom Lokrangierfuehrer zu tragenden Bediengeraets sowie Zugriffszeiten bei der Uebermittlung von Befehlen bei verschiedenen Funkfernsteuerungsbauarten ; Einsatz von automatischen Rangierkupplungen und deren Einfluss auf Arbeitserleichterung und Arbeitssicherheit; Entwicklung, Erprobung und Einfuehrung zweckmaessiger Tritt-Griff-Kombinationen zur Verbesserung der Arbeitsbedingungen des Lokrangierfuehrers; feste und mobile Tritt-Griff-Einheiten.
English Descriptors: Locomotive; Rail transportation; Plant railway; Remote control; Automation
French Descriptors: Locomotive; Transport ferroviaire; Chemin fer usine; Telecommande; Automatisation
Classification Codes: 240A05D02; 240A05D03; 001D13I

DIALOG(R)File 144:Pascal

07511571 PASCAL No.: 87-0013130
Funkferngesteuerte Rangierlokomotiven der Deutschen Bundesbahn fuer allgemeine Rangieraufgaben
(Locomotives de manoeuvre telecommandees par radio de la DB pour operations generales de triage)
(DB's radio-controlled shunting locomotives for general shunting duties)
THOMAS K
Bundesbahn-zent. Muenchen, Muenchen 8000, Federal Republic of Germany
Journal: ETR Eisenbahntechnische Rundschau, 1986, 35 (9) 577-584
ISSN: 0013-2845 Availability: CNRS-12075
No. of Refs.: 3 ref.
Document Type: P (Serial) ; A (Analytic)
Country of Publication: Federal Republic of Germany
Language: German Summary Language: English; French; Spanish
Les locomotives de manoeuvre de la DB sont equipees d'un systeme de telecommande par radio au moyen d'appareils de telecommande portatifs

English Descriptors: Locomotive; Sorting; Railway; Remote control
French Descriptors: Locomotive; Triage; Chemin de fer; Telecommande
Classification Codes: 001D15D

DIALOG(R)File 144:Pascal

07500845 PASCAL No.: 87-0002397
Einsatz neuer Informations-Technologien bei einem Produktionsbetrieb: dargestellt am Beispiel der Firma O&K Orenstein & Koppel Aktiengesellschaft
(Mise en oeuvre de nouvelles technologies d'information dans une entreprise de production)
(Use of new information technologie in a production works)
PAUL W
O&K Orenstein & Koppel A.G., Dortmund 4600, Federal Republic of Germany
Journal: ETR Eisenbahntechnische Rundschau, 1986, 35 (7-8) 497-501
ISSN: 0013-2845 Availability: CNRS-12075
No. of Refs.: 15 ref.
Document Type: P (Serial) ; A (Analytic)
Country of Publication: Federal Republic of Germany
Language: German Summary Language: English; French; Spanish
L'office central de Muenchen a recu mandat d'effectuer un essai de grande envergure portant sur 50 locomotives de manoeuvres telecommandees par radio au moyen d'appareils portatifs. Description de la structure et du fonctionnement de ces installations

English Descriptors: Locomotive; Test; Remote control
French Descriptors: Locomotive; Essai; Telecommande
Classification Codes: 001D15D

DIALOG(R)File 144:Pascal

05454220 PASCAL No.: 85-0226712
VPS-Rangiertechnik im System Funkfernsteuerung
(Technique de manoeuvre VPS avec le systeme de telecontrole)
(Radio telecontrol for VPS shunting operations)
KORBS T
Journal: Zeitschrift fuer Eisenbahnwesen und Verkehrstechnik, 1985, 109 (2-3) 142-148
ISSN: 0373-322X Availability: CNRS-4155
No. of Refs.: 10 ref.
Document Type: P (Serial) ; A (Analytic)
Country of Publication: Federal Republic of Germany
Language: German Summary Language: English; French
L'introduction du telecontrole dans le trafic ferroviaire represente un investissement avec une periode de restitution du capital relativement courte si on regarde les donnees quantifiables comme reequipement des locomotives, installation de la technique de commande a pied d'oeuvre etc... et si on compare celles-ci avec des economies d'effectifs de personnel et dans la technique des postes de manoeuvre. Description des mesures chez les services de transport Peine-Salzgitte

English Descriptors: Rail traffic; Remote control; Investment; Organization
French Descriptors: Trafic ferroviaire; Telecommande; Investissement; Organisation
Classification Codes: 001D15D

DIALOG(R)File 144:Pascal

05070363 PASCAL No.: 83-0329476
Heutiger Stand der Funkfernsteuerung von Industrielokomotiven in einem Huettenwerk
(Current status of radio control of industrial locomotives in an iron and steel works)
ZOELLE G
Journal: Stahl Eisen, 1982-11-29, 102 (24) 1237-1238
ISSN: 0340-4803
Document Type: P (Serial) ; A (Analytic)
Country of Publication: Federal Republic of Germany
Language: German

English Descriptors: Rail transportation; Locomotive; Remote control; Automation
French Descriptors: Transport ferroviaire; Locomotive; Telecommande; Automatisation
Classification Codes: 740A05D02; 740A05D03

DIALOG(R)File 144:Pascal

04971268 PASCAL No.: 83-0223093
Funkferngesteuerte Abdruecklokomotiven
(Radio-remotely controlled hump locomotives)
SCHMIDT M
Bundesbahn-Zentralamt, Muenchen, Federal Republic of Germany
Journal: Eisenbahningenieur, 1981-12, 32 (12) 527-535
Document Type: P (Serial) ; A (Analytic)
Country of Publication: Federal Republic of Germany
Language: German

English Descriptors: Locomotive; Rail transportation; Regulation(control); Automation
French Descriptors: Locomotive; Transport ferroviaire; Regulation; Automatisation
Classification Codes: 740A05D02

DIALOG(R)File 144:Pascal

04921596 PASCAL No.: 83-0171468
Funkfernsteuerung von Lokomotiven im Werksbahnbetrieb
(Radio-remote control of locomotives on factory sites)
RICHTER R
Vereinigte Oesterreichische Eisen- und Stahlwerke A.G. -VOeEST- Alpine Montan, Linz, Austria
Oesterreichischer Eisenhuettentag (Leoben (AT)) 1979-05-18
Journal: Berg- Huettenmaenn. Monatsh., 1980-01, 125 (1) 29-36
Document Type: P (Serial); C (Conference Proceedings) ; A (Analytic)
Country of Publication: Austria
Language: German

English Descriptors: Remote control; Locomotive; Plant railway
French Descriptors: Telecommande; Locomotive; Chemin fer usine
Classification Codes: 740A05D02; 740A05C

DIALOG(R)File 144:Pascal

03646012 PASCAL No.: 82-0161856
HOW ELECTRONICS ARE CHANGING DB'S SIGNALS
WEHNER L
Journal: RAILW. GAZ. INT., 1981, 137 (12) 1023-1027
ISSN: 0373-5346 Availability: CNRS-6496
Document Type: P (SERIAL) ; A (ANALYTIC)
Country of Publication: UNITED KINGDOM
Language: ENGLISH Summary Language: FRENCH; GERMAN; SPANISH
PROJET DE PLANS DE POSTES D'AIGUILLAGE ENTIEREMENT ELECTRONIQUES. UTILISATION DES MICROPROCESSEURS, DES FIBRES OPTIQUES. D'ORES ET DEJA LA CAPACITE DE TRANSMISSION DE DONNEES VITALES PAR LIAISON RADIO-ELECTRIQUE A

RENDU POSSIBLE LA COMMUNICATION CONTINUE VOIE-A-TRAIN SANS QUE CELA NE NECESSITE LA POSE DE CABLES ENTRE LES RAILS
English Descriptors: CHECK; RADIOTRANSMISSION; MICROPROCESSOR; REMOTE CONTROL; RAILROAD SWITCH; MOBILE RADIOCOMMUNICATION; RAILWAY SIGNALLING; OPTICAL TELECOMMUNICATION; RAIL TRAFFIC
English Generic Descriptors: GROUND AND SEA TRANSPORTATION; ELECTRONICS; TELECOMMUNICATIONS
French Descriptors: TRAFIC FERROVIAIRE; SIGNALISATION FERROVIAIRE; AIGUILLAGE; CONTROLE; TELECOMMUNICATION OPTIQUE; RADIOCOMMUNICATION; RADIOCOMMUNICATION SERVICE MOBILE; MICROPROCESSEUR; TELECOMMANDE French
Generic Descriptors: TRANSPORTS MARITIMES ET TERRESTRES; ELECTRONIQUE; TELECOMMUNICATIONS
Classification Codes: 892B03B; 145B07J03

03634871 PASCAL No.: 82-0150649
LANG. RUS
(ETUDE DU SPECTRE DES INTERFERENCES PROVOQUEES PAR LES LOCOMOTIVES ELECTRIQUES EHK-14)
(STUDY OF THE SPECTRUM OF INTERFERENCES DUE TO EHK-14 ELECTRIC LOCOMOTIVES)
KOSTENKO S V; ZUBETS A T; KOL'CHENKO M M; BORMOTOV B N; KULEMIN G P
A.N.S.U.S. S.R., INST. RADIOFIZ. EHLEKTRON./UKR, (4 AUT.)
Journal: KOKS HIM., 1982 (2) 45-47
ISSN: 0023-2815 Availability: CNRS-8770
No. of Refs.: 3 REF.
Document Type: P (SERIAL) ; A (ANALYTIC)
Country of Publication: UNION OF SOVIET SOCIALIST REPUBLICS
Language: RUSSIAN
MESURES DES INTERFERENCES AVEC LES COMMUNICATIONS RADIO PROVOQUEES PAR LA COMMANDE THYRISTORISEE DE CES LOCOMOTIVES SERVANT A LA TRACTION DES WAGONS D'EXTINCTION DU COKE, LES MESURES ETANT FAITES EN REGIME DE DEFOURNEMENT. NECESSITE DE CHOISIR DES CONDITIONS DE FONCTIONNEMENT LIMITANT LES INTERFERENCES

English Descriptors: COKING PLANT; OPERATION; REMOTE CONTROL; EXPERIMENTAL STUDY; USSR; ELECTRIC LOCOMOTIVE
English Generic Descriptors: ENERGY; FUELS
French Descriptors: COKERIE; EXPLOITATION; TELECOMMANDE; ETUDE EXPERIMENTALE; URSS; LOCOMOTIVE ELECTRIQUE; INTERFERENCE RADIO French
Generic Descriptors: ENERGIE; COMBUSTIBLES
Classification Codes: 730B01C02C3

DIALOG(R)File 144:Pascal

03548680 PASCAL No.: 82-0061972
FUNKFERNGESTEUERTE ABDRUCKLOKOMOTIVEN
(LOCOMOTIVES DE DEBRANCHEMENT COMMANDEES A DISTANCE PAR RADIO)
SCHMIDT M
BUNDESBAHN-ZENTRALAMT/MUENCHEN, FEDERAL REPUBLIC OF GERMANY
Journal: EISENBAHNINGENIEUR, 1981, 32 (12) 527-535 8 P.
ISSN: 0013-2810 Availability: CNRS-8892
Document Type: P (SERIAL) ; A (ANALYTIC)
Country of Publication: FEDERAL REPUBLIC OF GERMANY
Language: GERMAN Summary Language: ENGLISH; FRENCH
COMPTE TENU DES TECHNOLOGIES MODERNES (MICRO-PROCESSEURS) ON A ELABORE POUR LA COMMANDE A DISTANCE PAR RADIO DES LOCOMOTIVES DE DEBRANCHEMENT UNE CONCEPTION ORIENTEE SUR L'AVENIR AFIN D'OBTENIR UNE PERFORMANCE MAXIMALE TOUT EN AUGMENTANT LA QUALITE DU TRAVAIL DES INSTALLATIONS DE DEBRANCHEMENT

English Descriptors: MICROPROCESSOR; REMOTE CONTROL; RADIOTRANSMISSION; LOCOMOTIVE; CONTROL; RAIL VEHICLE
English Generic Descriptors: GROUND AND SEA TRANSPORTATION
French Descriptors: MICROPROCESSEUR; TELECOMMANDE; RADIOCOMMUNICATION; LOCOMOTIVE; VEHICULE FERROVIAIRE; COMMANDE
French Generic Descriptors: TRANSPORTS MARITIMES ET TERRESTRES
Classification Codes: 892B03D

DIALOG(R)File 9:Business & Industry(R)

2965160 Supplier Number: 02965160 **(THIS IS THE FULLTEXT)**
MOTOROLA TO PROVIDE RADIO SYSTEM FOR KOWLOON-CANTON RAILWAY (Motorola is awarded sub-contract by Siemens Transportation Systems for provision of a TETRA system for Kowloon-Canton Railway's West Rail)
Asia Pulse, p n/a November 08, 2000 WORD COUNT: 362

TEXT:
HONG KONG, Nov 8 Asia Pulse - Motorola's Commercial, Government and Industrial Solutions Sector (CGISS) Asia Pacific has been awarded a multi-million US dollar sub-contract by the Siemens Transportation Systems Group to provide a TETRA (TErrestrial Trunked RAdio) system for the Kowloon-Canton Railway Corporation's (KCRC) West Rail.

In a statement, Motorola said KCRC's West Rail was the first in Asia to implement a TETRA system in the 800MHz frequency.

Motorola said digital communication for West Rail Motorola's TETRA system would provide an integrated communication solution for West Rail - with a communication coverage that spans 30.5km of alignment, one Operational Control Centre, one Backup Operational Control Centre, nine stations and one maintenance centre. When the system becomes operational at the end of 2003, West Rail will serve 340,000 passengers a day. West Rail will operate 20 trains, each of seven cars, per hour per direction initially with an average train speed of 60 km/hr.

The 10-site TETRA system will be used mainly by the West Rail's train controllers, operators and maintenance personnel for better co-ordination and monitoring of passenger train fleets and maintenance vehicles.

The system will include customised and rugged train mobile radios, as well as computer-aided dispatch consoles to enable instant voice communication among train operators, station and Control Centre operators.

A distinctive feature of the TETRA system is its superior audio clarity. Through the reduction of voice transmission delays and the production of better voice quality and clarity across the network - the West Rail's operational staff will be able to benefit from greater communication efficiency, therefore reducing the risk of miscommunication.

Motorola said integrating the TETRA system with a signalling system would bring enhanced fleet management functionality to KCRC.

Advanced features include automated dynamic train run configuration, back-up configuration in times of emergency, passenger PA (Public Address) system calling and customized graphical user interface - all integrated to meet the day-to-day operational needs of KCRC.

Motorola's TETRA solution is due for delivery by the end of 2001. Motorola secured the first Asian TETRA system in Malaysia when it was awarded the Malaysia Express Rail project in September.

In 1999, Singapore's Mass Rapid Transit Corporation awarded Motorola a contract to implement a TETRA system for its mass transit operations.

ASIA PULSE

DIALOG(R)File 16:Gale Group PROMT(R)

10448474 Supplier Number: 100606574 **(THIS IS THE FULLTEXT)**
FRA says remote control bans unnecessary. (Rail Update).
Railway Age, v204, n4, p16(2) April, 2003
TEXT:
Legislation has been passed in several U.S. cities seeking to ban the use of locomotive remote control in yards, among them Detroit, Mich., and Shreveport, La. The Federal Railroad Administration says such bans are unnecessary.

"Based on safety data gathered to date, there is nothing to indicate that remote control operations should be banned from use," FRA Administrator Allan Rutter said in statement. "In fact, in cases where the FRA has identified potential problems associated with remote control operations, railroads have been extremely responsive in addressing such issues. Information currently available to FRA does not lead to the conclusion that remote control operations should be prohibited on safety grounds."

Rutter said FRA has "closely monitored the use of the technology industry-wide" since issuing remote control guidelines in February 2001. Those guidelines govern the training of employees operating remote control devices as well as device inspection. FRA is assessing operations on several Class I

railroads that have begun widespread implementation of remote control, "with the first priority to ensure that they pose no threat to railroad workers or to the public." ERA defines remote control devices as "appurtenances of locomotives subject to daily and periodic test and inspection under existing rule 49 CFR Part 229," and "is monitoring compliance with this requirement."

"In general, railroads appear to be proceeding consistent with the Safety Advisory (issued Feb. 14, 2001)," said Rutter. "The advisory reminds railroads that employees using remote control units are subject to the regulations for Qualification and Certification of Locomotive Engineers (49 CFR Part 240). Railroads implementing the technology are required to submit amendments to their training plans to ensure that remote control operators are properly trained and qualified to handle the most demanding type of service that they will be assigned to perform in their job."

Rutter said FRA "has taken the initiative to conduct a Human Reliability Analysis and Probabilistic Risk Assessment of remote control operations. This research will be extremely helpful in identifying and focusing on any perceived safety concerns. FRA has also taken steps to ensure that any accidents/incidents associated with remote control are identified and reported to FRA under the provisions of FRA's accident/incident reporting regulation (49 CFR Part 225). As with all aspects of railroad operations, FRA will monitor remote control operations and, if need be, will take whatever actions are necessary to ensure safety."

Rutter added that FRA "has limited data on which to base an objective safety analysis and must, therefore, proceed prudently." FRA said it "does recognize that these operations have existed in Canada for several years and appear to have a credible safety record. However, it is clear that the potential for serious injury exists, as it does in all aspects of railroad operations. As these operations expand, some of the traditional ways of conducting rail movements will be significantly modified. Under such circumstances, safety risk factors may change. It is FRA's task to ensure that this transition takes place safely."

"Our commitment remains to proceed cautiously, closely monitoring the use of remote control technology," said Rutter. "If we identify safety problems, we will move quickly to mitigate those safety risks, using the full range of enforcement and regulatory measures at our disposal."

10369496 Supplier Number: 99824645 **(THIS IS THE FULLTEXT)**

Unions protests lax oversight over remote-controlled trains.

HazMat Transport News, v24, n3, pNA March, 2003

TEXT:

Union members rallied in Washington March 11 to protest lax federal oversight of remote controlled locomotives.

Chanting "remote control has got to go," 300 members of the Brotherhood of Locomotive Engineers (BLE), International Brotherhood of Teamsters (IBT), and other labor leaders picketed outside of the headquarters of the Federal Railroad Administration (FRA).

All the day's speeches referenced national security and the threat of terrorist attacks.

Deadly Potential

"When locomotives are controlled by radio signal with a remote transmitter, you have to believe that if terrorists wanted to take control of an unmanned locomotive, they could obtain a transmitter," BLE President Don Hahs said. "Given the hazardous and nuclear cargoes in many rail yards around the country, an unmanned locomotive, controlled remotely, could become a deadly weapon."

Hahs said more than 40 accidents related to remote control technology have taken place in the past two years.

Remote Controlled Trains

The FRA also got letters from the AFL-CIO's Transportation Trades Department (TTD) and one from Sen. Edward Kennedy (D-Mass.) condemning its inactivity on the remote control issue.

AFL-CIO Secretary-Treasurer Richard Trumka condemned the FRA's unwillingness to meet with BLE leaders to discuss remote control, citing at least 10 communities that have adopted resolutions calling for a ban on remote control and/or improved remote control safety regulations from the FRA.

TTD asked the FRA to immediately stop the use of remote control locomotives until rigorous, enforceable federal rules were established.

"We have seen accident after accident while the FRA has simply allowed carriers to use this technology without any set of rules or sufficient oversight," the letter read.

FRA Administrator Allan Rutter says his agency has closely monitored the use of the technology industry-wide, and based on safety data to date, nothing indicates that it should be banned from use.

Current regulations govern the training of employees operating remote control devices, as well as device inspection. In cases where the FRA has identified potential problems associated with remote control operations, railroads have been "extremely responsive" in addressing such issues, he said.

FRA intends to proceed cautiously, closely monitoring the technology. "If we identify safety problems ... we will move quickly to mitigate those safety risks," Rutter said.

Contacts: Don Hahs, BLE, (216) 241-2630, ext. 248; Allan Rutter, FRA, (202) 493-6024; Sen. Kennedy's office, (202) 224-4543.

DIALOG(R)File 16:Gale Group PROMT(R)

08423523 Supplier Number: 71634657 **(THIS IS THE FULLTEXT)**
Remote control: Improving safety, building business.(locomotive remote control)
Luczak, Marybeth
Railway Age, v202, n2, p36 Feb, 2001
TEXT:

Railroads have long known that locomotive remote control is safe and efficient. They're now discovering it can help grow the top line.

"Locomotive remote control is a safe, expedient way to get the job done--you're in total control of every movement. And it's extremely comfortable to use." That's high praise from a locomotive engineer with seven years experience. Donna Poynor, a Puget Sound & Pacific employee, uses remote control regularly to set up trains and switch cars. No longer is she restricted to operating a locomotive from inside the cab to perform switching.

No longer must she rely on a brakeman's radio or hand signals to direct her moves. Poynor handles both jobs herself.

Such remote control suppliers as CANAC, Cattron-Theimeg, and Control Chief say the technology offers railroads like PS&P a safer, more efficient alternative to traditional switching operations.

Faced with an economic downturn, many railroads are looking for ways to improve efficiency. "We often ask ourselves, 'How can we do more with less, safely?'" says M.R. (Mike) Oakley, system manager-train handling performance for Canadian National. One answer, he says, is to operate with locomotive remote control.

Remote control in action

CN is one of the pioneers of locomotive remote control. Over 124 CN locomotives are equipped with CANAC's BELTPACK (R) system, and more than 2,100 yard and terminal employees are trained to use it. They use a BELTPACK (R) transmitter, which communicates with an onboard locomotive receiver to control train movements. Digital "packets" of information are sent from the transmitter via radio to the receiver, which interfaces with the cab controls. Users choose one of seven pre-programmed locomotive speeds, and the computer onboard the locomotive operates at that speed, accounting for tonnage and track grade.

CN started using remote control in the 1980s to improve safety, eliminating such human errors as visual or voice miscues, inadvertent movement, and other potential switching hazards. "It puts control of the locomotive at the point where the majority of serious injuries occur: at the coupling of cars," Oaldey says. Users control the locomotive from positions adjacent to the track or train, allowing a full view of the surrounding area. According to CN, yard and terminal accident rates have dropped 56%, and there has never been an incident attributable to a remote control failure or malfunction. "While remote control will not eliminate all accidents or incidents," says B. Paul Mertes, vice president-remote control technology, "it will help reduce them by more than a factor of two."

Remote control suppliers like CANAC build many safety features into their products. Among those in BELTPACK (R): a tilt detection system (if an operator tilts the transmitter more than 45 degrees, an audible alarm will sound; if the operator does not "right" the transmitter within 10 seconds, BELTPACK (R) will automatically bring the train to a controlled stop), protective pitch and catch (locomotive control may be transferred between a pair of operators at opposite ends of the train; although only one operator can control the locomotive at one time, either operator can apply such safety features as the emergency brake), operator alertness monitor (if an operator has not inputted a command within 50 seconds, an internal timer will sound an alarm and send a stop command to the locomotive), event recorder, remote dlagnostics, 24-hour help desk support, and locomotive horn, bell, and sand control. Most important: If remote control communication fails, locomotive movement will stop.

Railroads take additional safety precautions when operating remote control, providing employee training and instituting site-specific operating rules. Indiana Rail Road, which uses four remote control systems (three from CANAC and one from Cattron-Theimeg), has set up "remote control zones" to protect employees. For example, remote control operators can lock out the yard-access switch at IRR's Indianapolis Yard to prevent other train crews from entering. "If other crews want to enter the zone, they are required to stop and ask permission from the remote control operator first," says Thomas J. Quigley, executive vice president and chief operations officer for IRR.

Taking on trucks

Remote control gives IRR the ability to compete "head-to-head with the

trucking industry," says IRR President and CEO Thomas G. Hoback. "Smaller accounts that we previously would have considered marginal are now viable opportunities for new business."

One such account in Bloomington, Ind., required a switch engine based at its warehouse. "Remote control pays for us to have an engine there," says IRR's Quigley. "If we had to station a full crew as well, we may not have been able to do it."

PS&P has achieved similar results. "Remote control allows us to be more service-oriented and competitive in areas we otherwise wouldn't be," says Vice President and General Manager Thomas R. Foster. Use of the short line's four Cattron-Theimeg remote control systems helped increase business by 20% last year at the Port of Grays Harbor. To handle the increase, PS&P added two employees.

At railroads where remote control operation is used, the technology does not generally create layoffs. Remote control has enabled IRR to redistribute labor within the system, so the short line can provide "more responsive customer service and more regular work assignments and rest patterns for trainmen," says IRR's Hoback. Communication between labor and management is key. "It's like everything else--you have to make sure people feel comfortable," PS&P's Foster says. "We found that people who were at first reticent about using remote control like it now."

Customization

"It is rare that a customer accepts a standard remote control package," says Bob Aiken, chief engineer for Cattron-Theimeg. "Our forte is custom engineering, which can be as simple as moving switches or producing different size transmitters." Cattron-Theimeg's line of fully-programmable MP (Multi Processor) series of remote control systems are available in four housing styles, and users can select joystick controllers, joystick toggle controllers, or joystick paddle controllers. With Cattron-Theimeg products, users have the option to select speed control, which allows the onboard locomotive computer to control speed, or throttle and brake, which allows operators to control speed.

Remote control systems can also monitor locomotive sensors. For example, Aiken explains, an engineer stationed in a locomotive can reduce the throttle and apply sand using traditional console controls when a sensor detects a wheelslip condition. With remote control, such an action can be programmed into the system, so it can be performed automatically when wheelslip occurs.

Control Chiefs Train Chief(R) II remote control system can be integrated with GPS and cellular telephone technology for added security. If an incident occurs, Train Chief(R)'s "man-down" feature can alert a dispatch office via cell phone. The office can then track the remote-control-equipped locomotive with GPS to locate the affected employee. A command recorder, which archives operator commands and locomotive responses, can help determine what caused the incident.

Many of these custom features were developed directly from customer needs. CANAC introduced the CONTRAC(TM) LT (Lead/Trail configuration) remote control system (part of the CONTRAC(TM) series of throttle and brake products) last fall for such operations as main line transfers and main line switching. Because Wheeling & Lake Erie has a number of coal shuttle moves where trains must reverse directions, the short line ordered 31 CANTRAC(TM) LT devices. Now operators can control lead and trailing locomotives simultaneously using a remote control transmitter from a position on the ground or in either locomotive cab. Changing train direction is as simple as moving from one locomotive to the other. "Run-around moves can hold trains up for hours," says Larry Parsons, W&LE chairman and CEO. "CONTRAC(TM)

LT will save us, in some cases, two hours per train." It also serves as a "poor-man's distributed power system," he says, since it will improve power and braking dynamics throughout the train.

Rail customers have also requested "plug and go" remote control systems to reduce costs. Bessemer & Lake Erie recently began using three of Cattron-Theimeg's QDS (Quick Disconnect System) transportable systems. Instead of equipping every locomotive with remote control, B&LE has the flexibility to move the receiver (locomotive cab equipment) between locomotives as necessary. However, such remote control systems, though convenient, have limited functionality. While critical features like throttle, brake, horn, and sand control are retained, custom functions like sensor monitoring are not available. CANAC and Control Chief are in the design phases of similar products.

Addressing union concerns

Not everyone is in favor of remote control technology. "The United Transportation Union, Brotherhood of Railroad Signal-men, and Brotherhood of Locomotive Engineers all speak with one voice on the remote control issue," says Jim Stem, UTU alternate national legislative director. "We encourage our industry to embrace technology in many applications, but remote control demands a tremendous sacrifice on the part of rail employees." Two of the unions' main concerns are the ergonomics of the transmitters carried by rail employees and the level of electromagnetic radiation emitted by the transmitters. Suppliers are addressing both.

In an effort to make remote control use as comfortable as possible, CN started phasing in 250 of CANAC's new BELTPACK(R) IIe systems ("e" stands for ergonomic) last month. The new transmitter has rounded edges and weighs just 3.4 pounds. CANAC reduced transmitter weight by 32% from its earlier model and volume by 39%. This reduction is significant, as users typically carry additional equipment like two-way radios and cell phones to perform their duties. All of this weight can cause back strain and fatigue. Control Chief has similarly reduced Train Chief(R) II's transmitter weight, redesigning it "to allow maximum operator freedom, with such features as one-hand operation of throttle/brake and sanding operations."

The harness that remote control operators wear to hold transmitters in place must support transmitter weight and fit a variety of body types. To ensure that proper fit and support is maintained, CN recently developed a new harness with input from employees, ergonomists, and CANAC. The breathable mesh vest accommodates a remote control transmitter and two way radio, holds switch lists, and meets personal protection requirements for visibility. Users can adjust transmitter height to suit their body type, and transmitter weight is transferred to their skeletal system through a hip belt to eliminate strain.

Control Chief offers Train Chief (R) II users like Minnesota, Dakota & Western an additional harness feature. If the harness or remote control transmitter gets caught on moving equipment, for instance, the harness will break away, reducing the possibility of injury.

The other union concern, unusually high levels of electromagnetic radiation, may be unfounded. According to a CN-sponsored study performed by Dr. O. P. Gandhi, a professor of electrical engineering at the University of Utah, CANAC's BELTPACK(R) remote control system emits lower levels of radiation than a cell phone. CANAC's first generation BELTPACK(R) emissions are approximately 73 times lower than FCC standards set for the general population, and BELTPACK(R) IIe is estimated to be nearly 175 times lower. Other remote control product emission levels are said to fall into this range. In comparison, digital cell phones are only three to eight times lower. Additionally, absorption of radiation into the human body falls exponentially with distance. While the antenna on BELTPACK(R) is positioned at a distance of

four inches from the body, a cell phone antenna is typically just 0.591 to 0.985 inches away.

A labor-management consensus on remote control use may not come quickly, but many railroads agree they would be hard-pressed to find a safer, more efficient alternative.

All eyes on FRA

The Federal Railroad Administration held a technical conference for unions, railroads, and suppliers last July to openly address remote control issues. Following that, FRA published a proposal to modify the instructions of three currently-approved railroad accident/incident reporting forms. For the next five years, U.S. railroads would have to label all remote control accidents/incidents with a special code. With such accidents/incidents flagged, FRA can begin to establish trends. Comments are due Feb. 20.

At press time, FRA was also gearing up to issue a remote control safety advisory. "Remote control technology is proliferating," says George Gavalla, FRA associate administrator for safety. According to suppliers, there are approximately 2,000 locomotives equipped with remote control in the U.S. and 6,300 in Europe. "Now is the time, before it spreads further, to issue guidelines ensuring satety," Gavalla says. The guidelines are best practices or recommendations for remote control operation, not mandatory regulations. They cover remote control system features as well as reliability, maintainability, and system integrity.

In general terms, Gavalla says, guideline elements include:

* The remote control transmitter should control such locomofive functions as throttle, brake, and horn.

* Remote control systems (transmitters and receivers) should have protective features to prevent unauthorized use.

* Remote control systems should prevent interference between two or more transmitters operating at one time.

* Remote control systems should include safety features that stop locomotive movements if an operator becomes incapacitated.

* Electromagnetic radiation emission levels from remote control transmitters should meet OSHA standards.

* Remote control transmitters should be ergonomically designed so they do not cause long-term employee discomfort.

* Railroads must institute remote control operating practices/procedures to preserve a safe environment.

* Railroads must train/qualify their employees to use remote control systems safely. They must also inform and educate all other employees and individuals on or near the tracks where remote control locomotives are operating.

* Remote control systems must be inspected/tested at regular intervals to ensure that system reliability is maintained.

"Based on what we've seen thus far, if proper guidelines are adhered to, I'm confident that remote control can be used in a sate and secure manner" says FRA's Gavalla.

Not everyone is satisfied, however. "Guidelines provide the same information as regulations, but there is no incentive to comply with them," says Bob Harvey, BLE's regulatory research coordinator. "Guidelines are what you read before you program your VCR for the first time--something you won't read again until you buy your next VCR and have to program it. While I'd like to think the people in this industry are beyond that--that they take safety seriously--there are some cowboys out there."

But Gavalla points out that "if we (at FRA) determine that unforeseen problems exist, or that the safest practices are not being followed, we won't hesitate to step in."

Will guidelines increase remote control usage?

"Remote control technology will live or die based on how effective it is," says Gavalla. "If it promotes efficiency and safety, it will succeed: if it doesn't, it will fail. I don't see FRA guidelines being central to that. They will be in place to ensure that best practices are adopted."

DIALOG(R)File 20:Dialog Global Reporter

12882374 **(THIS IS THE FULLTEXT)**

(PR) Major Deal Marks the Launch of CANTRAC(TM) LT, CANAC's Newest Addition to its Locomotive Remote Control Family

PR NEWSWIRE September 18, 2000

CHICAGO, Sept. 18 /PRNewswire/ - At the Railway Supply Association International Rail 2000 Show today, CANAC Inc., the North American leading supplier of rail-related products and services, officially launched the second new addition this year to its family of locomotive remote controls, the CANTRAC(TM) LT.

CANAC President and CEO Frank Trotter has reason to smile these days. At the launch, CANAC announced that a major deal has been signed with Wheeling & Lake Erie Railway for the sale of 31 units of the new CANTRAC(TM) LT, with the first units being delivered at the end of this month.

``Designed for maximum flexibility and with an extensive set of functional capabilities, the CANTRAC(TM) LT is designed for push-pull applications; that's where rail operations run with a locomotive at each end of a train'', explains Mr. Trotter.

``We are always seeking new solutions to enhance our operations. The CANTRAC(TM) LT is engineered to simultaneously control both locomotives from either locomotive cab. This innovative approach to distributed power offers substantial benefits in terms of safety, flexibility, cost reduction and productivity - all key components of rail operations'', says Wheeling & Lake Erie Chairman and CEO Larry Parsons.

Heir to a Gold Standard Locomotive Remote Control Tradition

This new addition to the CANTRAC(TM) family of locomotive remote control products integrates the sophistication and reliability of CANAC's proven technology into Lead/Trail configuration. For instance, CANTRAC LT(TM) is built with CANAC's state-of-the-art digital radio technology - the LT delivers communication integrity that provides unbeatable reliability. A unique addressing scheme developed by CANAC also guarantees the integrity and safety of the LT network.

The CANTRAC LT(TM) configuration allows distributed power to be safely controlled from wherever the operator needs to be positioned. Depending on the required mode of operation, and in order to adapt to specific working and environmental conditions, the communicating components can be used in various combinations, which make it ideal for such various operations as: - Loading and unloading bulk material - Configuration make-up of road service trains - Mainline transfer operation - Mainline switching operations - General rail yard and industrial switching - Defective car set-off

Using the locomotives in a CANTRAC(TM) LT push-pull configuration improves power and braking dynamics throughout the train by taking

advantage of the full power of the trailing locomotive. With CANTRAC(TM) LT, when trains require reversal of running direction while transferring through classification yards, the operator simply changes direction by moving from one locomotive to the other. The result? Better intermediate road-switching operations thanks to the option of operating the train from either end for more efficient service to customers with varying track layouts.

A Push in the Right Direction

Proudly built at CANAC's ISO 9002 and AAR M-1003 Vectran facility in Pittsburgh, PA, the CANTRAC LT(TM) is at the forefront of Lead/Trail technology. Created jointly by CANAC's design group and an experienced team of rail operators, the CANTRAC(TM) LT is a pragmatic and effective solution that can be implemented in a timely manner to drastically improve the safety and productivity of your operations.

Founded in 1971, Montreal-based CANAC provides knowledge-based products and services to railroads, rail-related industries, companies operating their own on-site railroads, investors, and governments. From offices in 16 cities across North America, CANAC provides technology products, training, engineering and mechanical services, asset management, and is an industry leader in railway operations and planning services.

Created in 1871, the Wheeling and Lake Erie Railway (WLE) had various owners before it went into debt restructuring in 1994. The reborn WLE is however looking at a promising future. Its success is apparent with annual gross revenues of some $50 million, with trains operating in Ohio, Pennsylvania, West Virginia and Maryland, and moving approximately 130,000 carloads each year. Today, the new WLE employs nearly 400 people. Under aggressive and efficient management, the WLE is determined in becoming one of the more successful regionals to emerge in recent railroad history. SOURCE CANAC Inc.

/CONTACT: Joan Beauchamp, Manager - Public Relations, (514) 894-2364 or (514) 399-5772/ 10:49 EDT

DIALOG(R)File 20:Dialog Global Reporter

11072872 **(THIS IS THE FULLTEXT)**
ADVISORY/Inauguration of CANAC Inc.'s New Manufacturing Facilities; CANTRAC 550 Locomotive Remote Controls
BUSINESS WIRE May 17, 2000

--(BUSINESS WIRE)--

May I ask you something? When was the last time you drove a locomotive? Well, here's your chance! You are invited to test BeltPack, the locomotive remote control at a rail switching yard.

We are pleased to invite you to attend the inauguration of CANAC Inc.'s new manufacturing facilities in O'hara Township, Allegheny County and for the launch of the first-born of our new CANTRAC(TM) family of products, the CANTRAC(TM) 550, the latest throttle and brake locomotive remote controls..

Where: CANAC, North America's leading supplier of rail solutions, officially opens its 22,000-sq.ft. facility will lodge the locomotive remote control manufacturing operations for all of CANAC's business in the United States, Canada and Mexico, including the production of Beltpack(R)

and CANTRAC(TM) product line. CANAC, 105 Delta Drive, RIDC Park, O'hara Township, PA - 15238- 02805

Who: CANAC President & CEO Frank Trotter and Senior Vice President, Sales & Marketing, Guy Archambault. Economic Development Officials from Allegheny County and a number of Locomotive Remote Control current and prospective users.

When: Wednesday, May 17

Time: 9:00 a.m.

- Arrival and welcome to CANAC's new facilities - Opening ceremony (media invited) - Ribbon-cutting ceremony - Question period

10:00 a.m.

- Guests to board bus for the demonstration at FlexiFlo, a rail switching yard

10:45 a.m.

- CANTRAC(TM) and BELTPACK(R) technology demonstration

R.S.V.P to Ane Howard at 718-643-6554

CANTRAC(TM) Series

The CANTRAC(TM) Series is CANAC s new family of throttle and brake locomotive remote controls. This new family of products is perfectly suited to address the needs of industrial rail operations and common-carrier railroads of all sizes. It offers comprehensive solutions to specific problems, with the right set of functional capabilities. The CANTRAC(TM) Series is a premium quality product line that delivers performance ahead of the technology curve; it is also supported by a multi-disciplinary team of technical experts, and is priced to bring new meaning to the value/price ratio.

Increasing Safety, Improving Efficiency

The CANTRAC(TM) Series radio control provides the operator with the flexibility of movement and direct control of the locomotive from positions adjacent to the track or the train. In remote mode, the operator can be positioned at the leading end of the train movement with direct, complete control, and full view of the surrounding environment. Consequently, the use of CANTRAC(TM) systems reduces the risks of accident or injury as a result of miscommunication, inadvertent movement or other potential switching hazards.

The obvious and most striking benefit of reducing the number of yard accidents is the improvement of employees health, safety and working environment. It also generates major savings from the reduction of direct damages and loss of productivity. The CANTRAC(TM) technology not only allows yard crew members to operate in a much safer environment, but it also substantially increases their productivity level and makes delivering of rail transportation services more competitive.

Communication Integrity: Delivering Value on a Continuous Basis

In order to reap all the benefits of remote control operations, your organization needs to be able to rely on communication technology that delivers reliability every day, every shift, every time. A standard feature of our CANTRAC(TM) Series is its state-of-the-art digital radio subsystem, the same radio subsystem that BELTPACK(R) uses, and which is the gold standard when it comes to control signal integrity. This radio subsystem has proven itself by virtually eliminating radio communication outages between the locomotive and the operator control unit. With this unique technology, the CANTRAC(TM) Series substantially increases the productivity level of your yard crews. The radio operates in the 12.5 kHz bandwidth and complies with FCC requirements. In addition, CANTRAC(TM)'s patented communication technology makes efficient use of the RF spectrum capacity by allowing multiple controller units to operate in the same area while

sharing the same radio channel. This is often a critical issue in many geographic sectors because of limited availability of radio frequency channels in user-intensive areas.

Scalable Architecture for Maximum Return

CANAC supplies the most advanced locomotive remote control systems on the market. It is our mission to offer our customers the solutions that best suit their specific and evolving requirements. Our scalable architecture allows you to secure today's investment, while being ready to address tomorrow's challenges. With a unique system architecture that is standard across its comprehensive portfolio of products, CANAC can effectively fill your existing needs while still positioning you for the future.

CANAC R&D Program: Keeping our Customers Ahead of Their Time

When it comes to investing in Research & Development for locomotive remote control technology, CANAC is second to none. With a dynamic team of highly qualified engineers, a large customer base and a long-term commitment to this market, CANAC is in a unique position to deliver innovative solutions to customers, enabling them to continuously improve their operations. Our R&D Group benefits from the fact that CANAC is the only supplier of locomotive remote control that makes extensive use of its technology in its own operations.

The CANTRAC(TM) Series is the result of a focused effort to develop a comprehensive family of products with breakthrough features that ensure greater safety, superior performance and better ergonomics for increased comfort and a healthier workforce.

Features That Deliver Value

Key System Features CANTRAC(TM)450 CANTRAC(TM)550 CANTRAC(TM)650

Throttle Lever Standard Standard Standard Independent Brake Lever Standard Standard Standard Directional Change Standard Standard Standard Emergency Stop Standard Standard Standard Alertness Timer Standard Standard Standard Low Battery Two Stage

Indicator Standard Standard Standard Synthesized Digital Radio Transmitters / Receivers Standard Standard Standard Tilt Detector

and Tilt Bypass Standard Standard Tilt Detector

and Tilt Extender Standard Infrared Addressing of

Portable Operator Unit (Programming frequency and

locomotive assignment) Technician Technician Operator

Driven Driven Driven Sand, Bell and

Horn Controls Standard Standard Automatic Brake Control Standard Standard Protective Pitch & Catch(TM) Standard Archive Memory Standard Status lights Standard Standard Optional Talker, Voice Messages Standard Remote Diagnostic Optional Repeater Subsystem Optional Optional CANAC 7 x 24 Help Desk

Support Optional Optional Standard (1st year)

CANAC Support Program: A Long-Term Commitment to Deliver

The CANTRAC(TM) product line is supported by CANAC s help desk. All CANAC customers have access to a dedicated team of technical specialists to keep their operations running.

In addition to year-around assistance, CANAC offers wide-ranging remote control support services such as:

- Installation and Commissioning services - Training Services (Operators and Maintenance) with comprehensive training materials - Supply of Parts and Components - Financing Program - Application Engineering - Yard Efficiency Review in Remote Control Mode - Asset Management

CONTACT: ahmedia Ane Howard, 718/643-6554 09:02 EDT MAY 17, 2000

15556795 SUPPLIER NUMBER: 98265133 **(THIS IS THE FULL TEXT)**

Remote control: technology trumps tradition. (Cover Story).

Ytuarte, Christopher

Railway Age, 204, 2, 21(7) Feb, 2003

TEXT:

Successful pilot programs, a new wave of technology, and labor conflicts mark the widespread implementation of locomotive remote control in the U.S.

The domestic power struggle between a husband and wife is typically illustrated in American humor through the battle for the television remote control. Similarly, though it can't change the channel, locomotive remote control can change the way a rail yard is run and by whom. And the battle for this hand-held device does not evoke images of marital bliss, either.

With dozens of pilot programs currently running on Class I railroads throughout the U.S. and with years of documented success in Canada, remote control is viewed by some as the future of safety and efficiency in the industry, even as it drives a wedge between the labor unions vying for its control. Railroads, wanting the type of productivity and profitability increases touted by suppliers, have begun to implement remote control systems nationwide under new Federal Railroad Administration guidelines and training requirements.

Meanwhile, the industry's two largest labor unions--the United Transportation Union and the Brotherhood of Locomotive Engineers--though in agreement on their general distaste for the technology, are split in philosophy on how to approach it.

And waiting for the dust to settle, suppliers are keeping busy ramping up their production capabilities, maintaining their in-service products, and developing new technology for the next step in the remote control revolution.

Whose remote is it, anyway?

On Jan. 10, a decision rendered by neutral arbitrator Gil Vernon, Chairman of Special Board of Adjustment No. 1141, effectively awarded the right to operate locomotive remote control units to the UTU, bringing what would seem to be an end to a long struggle between UTU and BLE leadership over control of this burgeoning technology. Key to the ruling was the arbitrator's understanding and definition of the type of work performed by remote control systems in a switching yard. According to Vernon's decision, "(Locomotive) control decisions are not made exclusively by the engineer but are made by the groundman. In the 'move' intensive world of yard and terminal operations, the groundman usually makes these decisions rather than the engineer."

That clarification is the basis for the arbitration ruling against the BLE. It said that "the control of engines in terminals is not by custom and practice exclusively reserved to engineers," and that "the operation of remote control units by UTU groundsmen does not constitute an infringement on the traditionally exclusive duties of an engineer," as the BLE has long claimed.

In his ruling, Vernon emphasized the simplicity of properly utilized locomotive remote control technology as one reason why it should not be relegated exclusively to highly-trained engineers:

"(I)t could be said that a traditional engineer operating an engine is like a highly skilled French chef preparing a seven-course meal from scratch (adding various combinations of ingredients and cooking them in various ways), and the remote control operator in yards and terminals just puts the TV dinner in the microwave, sets the time and pushes the start button (set it and forget

it)."

BLE International President Don Hahs expressed outrage over the arbitration ruling, predicting industry-wide job losses and dangerous working conditions for remote operators.

"First and foremost, the decision creates serious safety concerns for railroad employees and the general public," said Hahs. "Citizens should be concerned about the remote control technology itself because it is not totally reliable. Any piece of equipment, like the remote control devices, will malfunction at some point. No matter how reliable they are, they will fail."

UTU International President Byron Boyd spoke with Railway Age regarding the arbitration and its effect on the industry.

"It wasn't our desire to bring remote control into this industry," says Boyd. "It is new technology, we were confronted with it, and we addressed it for the betterment of our membership. The BLE was invited into the process, and they chose not to be a partner, for whatever reasons. After the decision came down in support of our agreement with the carriers, I extended an olive branch to the BLE. Our view is that we're not going to stop technology, and I'm not going to allow the members of the UTU to suffer because of a short-sighted approach to these technological changes. At the same time, I'd like to reach out to the BLE to bring them into the process. We believe it's just another example of why the operating employees on the railroads should be represented by one union."

On whether the UTU and the railroads were collaborating, as the BLE has suggested, Boyd reiterated that the UTU is not in favor of remote control, but rather is in favor of its members remaining employed.

"The carriers are the ones that brought the technology on board, and the carriers are the ones that have the jobs," he says. "I don't know whom else we're supposed to deal with to address our needs and concerns other than the people who have the technology. And, as a result of our agreements, we now own that technology. I believe those who want to throw stones or cast aspersions in this direction are doing so as acts of regret, since they don't have the work themselves."

Boyd felt that the ruling in favor of the UTU should only further strengthen his call for a unified rail labor union.

"A merger makes sense now more than ever," he says. "This reinforces the position we had taken before we entered into arbitration. We'll go forward with what we believe to be the correct position with regard to representation of operating employees, and a merger of these unions is the best way to go about it. But there are other means of doing it, if we have to. We're not going to give up trying to get the operating crafts together. They should be together. And the only reason they're not together now is because of artificial means and reasons."

The core of the BLE case, as stated by Hahs, remains the issue of safety, that of both rail workers and the general public. They claim that UTU members assigned to remote control positions will be inadequately trained, and cite more than 30 accidents and derailments the BLE has reported over the past year as evidence. "Why the railroads would choose to de-skill a position and deny people the work they spent a lot of money training them for, I can't figure out," said Hahs.

Railroads and suppliers argue that such incident reports are being exaggerated by labor unions out of concern for job losses rather than safety.

Even so, several cities in the U.S. have passed legislation that bans any use of remote control locomotives in yards. Most recently, officials in Shreveport and Baton Rouge, La., as well as Marysville and Detroit, Mich., have outlawed the technology.

Following the arbitration ruling in January, the Association of

American Railroads weighed in on the safety concerns when President and CEO Edward R. Hamberger took issue with the claims of dangerous working conditions.

"There is absolutely no data or evidence to support those who say the new technology compromises safety," he said in a statement. "Experience and logic tell us just the opposite."

Pilot programs push forward

Implementation of locomotive remote control on every Class I railroad in the U.S. would seem to be a sure bet. In Canada, there are 180 remote control units currently in use, and it is believed that there are already some 500 units being utilized on U.S. short line and regional railroads. The success of the Class I pilot programs currently running in the U.S. should prove a good barometer as to what the remote control market holds for the future.

In April 2002, UTU General Chairman Dean Hazlett was the union representative for the remote control operators at Union Pacific's Hinkle hump yard pilot program in eastern Oregon. During the initial training period, according to Hinkle, productivity in the yard dropped noticeably. But now that all the operators are qualified and are working with full knowledge of the equipment and the site, productivity has increased 5% above what it was before remote control implementation.

"With remote control, we have concerns about the elimination of jobs, but I think we're better off sitting down and reaching an agreement through which we can control the process," says Hazlett, echoing the UTU position. He is sure that within the next few years, railroads will begin to truly see the profitability and benefits of remote control, starting with increased productivity in yards. "In the long run, there will be fewer people working, which increases carrier profits," he says. "Of course, there will a time period where they will be waiting for their return on investment for the equipment and training. But the end result will be the hiring of fewer people, which certainly will increase profits."

Down in Florida, UTU General Chairman John Hancock has worked with both CSX Transportation and the Florida East Coast Railway in implementing successful remote control pilot programs.

"As the pilot projects were set up on the property, our basic position was that we didn't want remote control. However, we thought it was better to sit at the table and negotiate how it would be done rather than saying 'No, we don't want it,'" says Hancock. "We'd rather be at the bargaining table than not have the work at all. Based on that concept, we sat down with the carriers and gave them some guidelines on what we thought we needed safety-wise. By sending a general committee officer out to each location of implementation, that part of the project went as smoothly as it could possibly have gone, beating in mind you still had those aversions to change."

Under Hancock's supervision, CSXT installed locomotive remote control at ten of its yards, with 95% of the programs going off without a hitch. Implementing Cattron-Theimeg's Accuspeed(TM) units, CSXT has seen great success, and Hancock thinks the technology will eventually provide a boost to railroad productivity.

"Remote control gives the cattier the ability to work with fewer people, which is something we work against," says Hancock. "But at the same time we're cognizant of technological changes. And it's my position that we'd rather be at the table negotiating change and securing jobs for the people we represent than sticking our heads in the sand and ignoring its existence. As the saying goes, 'You'll get left at the train depot as your train passes you by.'"

Hancock's work with FEC helped implement remote control on a railroad

that has actually been utilizing the technology since the late 1960s. In accordance with the new FRA guidelines, he aided FEC in upgrading safety standards and remote systems. Over the past year, FEC has equipped five GP38s with CANAC's Beltpack(TM) technology and now has 83 employees on the property qualified to operate locomotive remote control.

"We've made some great productivity gains," says FEC Vice President-Transportation Charlie Lynch. "We've managed to take three-person crews and reduced them to two-person crews, both members of which are qualified remote control operators. We feel it's a much safer operation now. What we've done, in essence, is take out the communication link between the person on the ground and the engineer in the cab. We feel we've put control in the hands of the person who really needs the safety protection.

Lynch says that a big part of the implementation process was sitting down with the FRA and UTU to make sure all involved were on the same page. Another key aspect was the creation of "remote zones," areas of the terminal that are off limits to anyone not qualified as a remote operator.

"Basically, the zone concept says the remote control crew, when operating in that zone, has exclusive use of that track," says Lynch. "No other train crew or anybody else can enter that zone unless a remote operator gives them permission. Whereas a three-person crew operates under yard-limit rules involving "seen-and-be-seen" rules and communication with the yard-master, the remote zone gives the operator control of the railroad he's switching on."

Echoing the thoughts of Gil Vernon on the simplicity of remote control, Lynch says that "any 16-year-old who ever played a video game could be a very good remote control operator in a short period of time." At the same time, he emphasized that completing the remote training and truly being "qualified" are two very different things.

"Different types of switching dictate when an operator is 'qualified' to use remote control at a certain location," he says. "For example, the remote switching performed in the FEC yard in Miami primarily involves very heavy aggregate cars and loaded, 100-ton rock hoppers. The switching in our yard at Bowden often involves empty or intermodal flat cars. So if a person is switching one type of car in one yard and goes to another yard with different types of cars, he has to get a feel for how those cars roll before he can be at his best."

Technological advancements

According to industry sources, the market for remote control technology in rail yards could reach 2,000 units in the near future. Such predictions have suppliers expanding their production capabilities and developing new technology as widespread implementation draws near.

"We've had to ramp up our production facilities in Pittsburgh," says CANAC President and CEO Frank Trotter. "We've made arrangements with contract shops for installation around the U.S., and we have to monitor the work in those shops. And after the work is done, we have to commission the systems in terms of frequencies and make sure everything is ready to go. All this involves a tremendous field force, which we've had to ramp up and deploy over the past year. We've got people at all four corners of the continent working with the customers in the yards, whether it's with training or with the locomotives themselves, fine-tuning everything."

At Control Chief, the newly developed Plug-and-Go" unit makes remote control transferable.

"The railroads are currently utilizing fixed radio remote control systems installed in the locomotive cab, and the locomotive is being moved to a different location or maybe not put into use, which leaves the remote technology not in use," says Vice President-Sales and Marketing Tony

Habovstak. "Plug-and-Go makes it mobile so that the technology can be moved from one locomotive to another, utilizing the asset on a more broad basis. It also cuts the cost of installation and makes it more productive."

Cattron-Theimeg has recently patented new capabilities for its existing systems. Synchronized Time Sharing (TM) utilizes a GPS timing device on board the locomotive along with two-way digital data radios to form a system that maximizes radio spectrum efficiency to nearly 100%. CSXT has also contracted Cattron to install remote technology in all of its hump yards in 2003.

"A year ago, there was a lot of uncertainty," says Cattron Senior Vice President-Railroad Operations Jim Kingerski. "The railroads now know that the products will work and they're moving forward, and Cattron is moving forward with technological advances, not only for this year, but for years to come."

GE Transportation Systems-Global Signaling has developed the Locotrol (R) Remote Control Locomotive system, which it says is the only unit on the market offering complete communication coverage with RF router flexibility.

Technological advancements over the coming year will involve further integration of switchyard functions into one unit. RailComm President and CEO Joe Denny says his company is developing a remote control system that is "a centralized, server-based control system for yards," with several different functions on one platform, including remote switch control and routing, blue flag protection, derail control, pull-back protection, and shove light systems. Along with working on its own product, RailComm is talking with several locomotive remote control suppliers about integrating the technology into their units.

"We don't see any resistance to this technology," says Denny. "Not even from the unions."

DIALOG(R)File 148:Gale Group Trade & Industry DB
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14397754 SUPPLIER NUMBER: 83735341 **(THIS IS THE FULL TEXT)**

Coming to your Class I: Remote control; U.S. railroads and their biggest operating union appear ready to march together--and very carefully--into the age of locomotive remote control.

Ytuarte, Christopher

Railway Age, 203, 2, 15(3)
Feb, 2002

TEXT:

The struggle for acceptance of locomotive remote control technology in the U.S. took major strides toward the end of 2001 and in early 2002.

Until recently, both the United Transportation Union and the Brotherhood of Locomotive Engineers strongly opposed the use of remote control technology on locomotives in the U.S. For example, in 1997, UTU Canadian National Legislative Director Tim Secord claimed to have documentation of 189 remote control equipment failures on Canadian National. But times--and leadership--have changed, and on Jan. 14, the UTU agreed to join Class I railroads in pilot projects utilizing remote control technology in switching operations.

In mid-January, Railway Age spoke with UTU International President Byron Boyd, Jr. Boyd has often said that labor has learned it cannot stop new technology, and needs to work with management to implement it in a manner that will protect workers as well as enhance operating efficiency.

RA: How do you see remote control technology being implemented in the U.S.?

BOYD: "If you take a broad-brush approach, you can't capture details to determine the best way to proceed on each railroad. For example, a pilot project on Union Pacific will develop statistics relating to the specific location of the project, but that data may differ from what will be developed from a pilot project on CSX, Norfolk Southern, or BNSF. Thc key is to examine all the variables in the mix, which includes individual railroad operation and geography, to determine the impact of remote control on safety, compensation, job security, and economics. You can't manage without measuring and one purpose of the pilot projects is to avoid speculation. First-hand experience trumps second-guessing every time.

RA: How long will these pilot projects take?

BOYD: "it depends upon mutual cooperation, the mutual understanding of each other's interests. The less cooperation, the longer any delay will be. But foremost it is crucial that we fully understand the technology and how it impacts business and workers. When you condemn technology out of pocket, or arbitratily take a position opposed to it, you usually end up in the courts and then the courts take charge to the exclusion of the parties. The BLE proved this theory when a federal court enjoined them from taking a job action on remote control implementation. When you are on the outside, it's pretty hard to be part of the game."

RA: Why the change in thinking on remote control?

BOYD: "The technology has been a reality in Canada for 10 years. The problems always associated with remote control revolved around safety, compensation, and job protection. When you deal with this subject like the carriers have done through the Wage and Rules Panel and work with us on an experimental basis prior to any attempt to implement it, it gives us the ability to look at, understand, and manage those three key issues. That was never the case with what took place on the Wisconsin Central, which was moving to a single-person operation with remote control. We vigorously opposed that unilateral attempt by WC. This is a whole different ball game, one where the parties are sitting down with one another and trying things on an experimental basis to see if they work. The parties can figure out a way to address their concerns and make it work to the benefit of everybody. Otherwise, it will be implemented as the result of some arbitrary decision by the courts or arbitrators, with forced conditions nobody likes . That's not the way to go."

The UTU signed a letter of intent last Sept. 26 with Burlington Northern and Santa Fe, CSX Transportation, Kansas City Southern, Norfolk Southern, and Union Pacific assigning the work of remote control operations to UTU members. This happened at a time when the UTU was waging a hard fight to merge with the BLE. UTU lost that fight when 70% of BLE members voted against the merger.

On the same day the pilot program was announced, a U.S. District Court in Illinois granted the railroads a preliminary injunction barring the BLE from conducting strikes "over the introduction of locomotive remote control technology and assignment of remote control work to conductors and trainmen."

CSX Transportation was first to place a major remote control order. The railroad announced last month that it had ordered 100 Accuspeed systems from Cattron-Theimeg.

Following the UTU's announcement, Kansas City Southern said it ordered 50 Beltpack remote control systems from CANAC, Inc. With that order, KCS becomes the largest user of Beltpack technology in the U.S., according to CANAC, which will also provide such support services as specialized computer software and web-based training for KCS operators and supervisors.

The Florida East Coast Railway, a major regional, though no longer a

Class I due to a regulatory change, is among smaller roads that already have remote control experience. "It was in April, 2001 that we equipped our first locomotive," says FEC President and CEO John McPherson. "And through all these negotiations and workings with the FRA, we had a unit equipped with remote control that we were using to train people and develop our guidelines at the same time.

Currently, the FEC has four units equipped with CANAC Beltpacks, and a fifth on the way. One unit works three shifts a day, five days a week in a Jacksonville switching yard, while another unit trains employees on one shift and works a second in Miami. According to McPherson, 34 FEC employees have been trained to use the technology along with 12 supervisors.

"People are lining up to train on it," says McPherson. "If you're a previously qualified engineer, it takes four hours of classroom training and 16 hours of field training. If you're not previously qualified, we give you 44 hours of classroom training and 80 hours of field training."

Implementation of remote control technology at the FEC has long been a goal of McPherson's; he says it makes for an extremely safe operation that workers are very comfortable with. "I see it as probably the most productive implementation in our industry since we were able to eliminate the caboose."

According to Morgan Stanley Dean Witter analyst James Valentine, remote control technology could save Class I railroads as much as $250 million a year in operating costs.

CANAC President Frank Trotter, looking at the potential U.S. remote control market, feels that there are "somewhere between 1,200 and 3,000 opportunities for applications at the extreme upper-end," and says CANAC plans to provide Beltpack demonstrations for Class I railroads at facilities equipped with the system. "We will show them all the things you really can't see in a boardroom--you have to see them in the field," he says. Trotter views remote control as a great investment for railroads because "it is a technology that has upward compatibility," meaning it can continually be upgraded as new features become available.

"It's an investment that pays for itself in about five months or less, and there's not many investments left in industry, let alone the railroad industry, with that kind of payback," says Trotter. "We don't think it is a matter of 'if' at all anymore, we don't even think it's a matter of 'when.' It is upon us."

Cattron-Theimeg Marketing Director-North American Railroads Bill Halt points out that advancements in the technology down the line could affect how railroads buy now.

"I believe U.S. railroads are going to go with the supplier that they feel has the best platform on which to build future enhancements," says Holt. "Our technology is fifth or sixth generation of our controlling equipment, and we believe it would be a preferred platform for locomotive management issues that might become a requirement in the future."

Holt feels that U.S. purchasing will be driven by two factors: productivity and safety. "The Canadian lines with remote control technology have seen an increase in their productivity, and I think you'll see that in the U.S.," he says. "I believe the kind of safety margins that are published by Transport Canada on low-speed incident reduction will be seen in the U.S. quickly because the technology, regardless of the vendor, when properly employed, will produce those two results."

Some suppliers think Class I's will be interested in buying remote control units during slow economic times in order to keep operating costs down. "The current economy should actually help sales of remote control units, because railroads will be asking 'how much more efficiently can I run my company with radio remote control?'" says Control Chief Railroad Industry/New

Business Development Manager Tony Habovstak. "They're going to find ways to reduce the cost of their operation, and radio remote control can provide that."

Habovstak is optimistic about the potential for remote control technology among Class I railroads in the U.S. "I think it's going to be as successful as it is in Canada," he says. "There are a lot of issues that need to be resolved, specifically employee relations issues and union issues, operating procedures, etc. But look at it this way: If three Class I's, say CSX, UP, and BNSF, each bought 300 radio remote control systems over the next few years, that would put an additional 900 to 1,000 units into U.S. Class I operations. So it seems to me that the U.S. could potentially equal a portion of the Canadian market relatively quickly. And as the technology catches on, I feel that more and more units will be sold, and we'll find that we have as many in use in 10 years as Canada does now."

The future of locomotive remote control in the U.S. remains uncertain, but with so many Class I's interested in buying and suppliers anxious to sell, it's a future that looks bright. As labor issues and safety concerns are addressed, it seems only a matter of time before U.S. railroads have it all under control.

09394814 SUPPLIER NUMBER: 19184247 **(THIS IS THE FULL TEXT)**
Remote control: efficient, safe - and under challenge.(Cover Story)
Welty, Gus
Railway Age, v198, n2, p33(7) Feb, 1997

TEXT: Railway labor says that disasters will inevitably result from use of remote control. Railroaders with remote control experience, however, have a different story to tell.

Canadian National has more experience with remote control of locomotives than any other North American railroad. So in any debate about the safety and efficiency of remote control, it's appropriate to turn to CN and the developer of its Beltpack control system, Canac International, for a performance assessment.

The current debate was triggered by a United Transportation Union petition to the Federal Railroad Administration for issuance of an emergency order that would prohibit all U.S. railroads from using remote control equipment, including those carriers now making limited use of remote control. (The UTU also petitioned for an emergency order banning expansion of one-person-crew operations, but this union action applied only to Wisconsin Central.) FRA's response was to hold a two-day "informal safety inquiry" last December at which the CN-Canac experience seemed to strongly support the industry's argument that remote control locomotive operations are both efficient and safe.

THE CN EXPERIENCE

Using technology that Canac began developing 10 years ago, CN began a five-year pilot project in 1990 with monitoring by both Transport Canada and the Transportation Safety Board of Canada. The result: CN was allowed to extend implementation across its system in September 1995. Today, 62% of CN's yard assignments in Canada--industrial, hump, and flat switching--are operated by locomotives under remote control, and CN plans to move to 100% for all

switching operations including main line switching.

The pilot program was carried out at CN's dual-hump Symington Yard at Winnipeg. Its report: "CN operated approximately 1,460 days . . . using hump remote control technology, representing some 7,300 shifts and over 58,000 hours of operation. The project required that remote control locomotives operate beside and concurrently with manually controlled locomotives in the flat yard enroute from and to the hump. In these thousands of hours of testing, proving, and enhancing this technology, we did not experience a single incident as a result of (using) the remote technology."

By year-end 1996, Canac had delivered 122 Beltpack systems, 97 to CN and 25 to Canadian Pacific. On CN, at the time of the FRA inquiry, 100% of hump operations were being conducted with remote control, along with 280 yard and industrial assignments. This added up to more than 47,000 shifts representing more than 375,000 hours of hump and flat switching operations, handled by about 1,500 employees who have been trained in remote control operation.

CN currently uses a two-person "pitch and catch" system, with the crew member on the movement's leading end given control. But, "where feasible, CN plans to explore switching using remote control locomotives under the control of a single employee."

CN believes safety is enhanced by the technology. The Beltpack retains all safety functions, including the ability to make an emergency brake application if it's needed. Further, with this system "an operator within visual range of a movement is in control, as opposed to (having to) transmit instructions to another employee via radio or hand signals. Instructions from the operator in control via electronic means cannot be misinterpreted, delayed, or executed in error."

In addition, CN notes that "personal injury potential is dramatically reduced with the elimination of inadvertent movement of cars or locomotives. Operators required to move between cars are in full control of the movement of the locomotive. They are no longer reliant upon another person for their protection."

Incidents during switching can be caused by mechanical or track problems or by human error, and CN says that "using remote control technology, there has been "a threefold reduction in yard incidents." Up to last December, "there has never been an incident as the result of technological failure of remote control equipment, and the safeguards built into the system prevent these from occurring."

Canac, once a subsidiary of CN, absorbed the railway's Technical Research Department in 1993 to create its Railroad Technologies Division. Its remote control system differs from other radio-based systems in that it is a speed control system. The operator selects the appropriate speed and all other functions including throttle. Independent air brake settings are handled automatically by a computer on the locomotive.

Like other suppliers' systems, Canac's includes a long list of built-in safeguards to make the technology fail-safe. Among these features are alertness circuitry. that works much like in-cab alerter systems, and tilt devices that will automatically halt locomotive operation if the control pack is tilted beyond a certain number of degrees from level.

U.S. SHORT LINE EXPERIENCE

FRA's present involvement with remote control operations resulted from the UTU's petition, but it is by no means the first time the agency has taken action with respect to such systems.

Recent history began in November 1994 when the FRA granted a waiver to Wheeling & Lake Erie after reviewing W&LE operations. At the same time, FRA announced a two-year test of remote control technology in order to gain more information. During the test period, the Association of American Railroads

notes, there have been no indications that use of remote control "presented significant safety issues... In fact, operators find that safety is increased when the person controlling the equipment is on the ground observing the movement."

At last December's inquiry, AAR called it "appropriate for FRA to refrain from issuing any emergency order... or from instituting rulemaking. Safety data do not support regulatory intervention at this time. The record shows remote control operations are safe and that they provide an equivalent level of safety to conventional operations." The railroads called on FRA to "finalize its waiver program of two years, amended as suggested by the industry in order to take advantage of this emerging technology in a variety of situations."

But on Jan. 10, Federal Railroad Administrator Jolene Molitoris wrote to WC President Ed Burkhardt regarding WC's plans to expand use of one-person crews "and to begin using remote control devices to control locomotives in yards." Expansion of one-person operations "beyond those occurring now should continue to be held in abeyance until final FRA action is taken," Molitoris wrote. "Similarly, FRA expects WC to hold in abeyance use of remote control locomotives until we have had an opportunity to review safety information." Molitoris said FRA "remains vitally concerned with the safety issues surrounding these types of operations," including issues involving employee fatigue, effect of a disabled engineer, emergency assistance for disabled engineers, and train length. When its review is complete, FRA will then determine "the appropriate emergency, regulatory, or other action to be taken to ensure the safety of train operations." FRA did not indicate when its "final action" would be taken.

While major U.S. freight railroads have not demonstrated much interest in either remote control or one-person-crew operation, both issues are important to a number of regional and short line carriers, several of which described their operations and experiences at the FRA inquiry.

Wisconsin Central, for example, began remote control operations in 1992 in a push-pull service between a quarry and a rock crusher. It later introduced remote control on its White Pine Line engineer-only operation in which the engineer uses the remote primarily in setting out and picking up cars at three locations along the 77-mile route.

WC had planned to expand use of remote control last fall, but agreed to a delay to allow the FRA to review existing and planned operations. The expansion would involve use of remote control in switching at three yards, and the road said it is studying remote control for "other-than-yard-system applications, such as intermediate work picking up and setting out cars with road trains." But, "WC does not intend to operate locomotives by remote control without onboard personnel on road-haul operations."

As for rail labor's positions, WC finds them somewhat ambiguous: "Unlike its U.S. counterpart that has consistently opposed the use of remote control technology, the Canadian UTU has entered into an agreement with CN to operate remote controlled locomotives. Both the Canadian UTU and the Brotherhood of Locomotive Engineers are claiming the right to perform this work on Wisconsin Central's sister subsidiary, Algoma Central."

At the FRA inquiry, rail labor's safety concerns were addressed by management as well as by employees who actually handle remote control and one-person operations.

The Indiana Railroad, for example, went into these operations only after observing WC and CN procedures, with onsite inspections that included train and engine personnel. IRR said it welcomed "FRA's thorough scrutiny of our system, but we also believe it would be unfair and counterproductive to arbitrarily put a stop to it without any evidence that it creates a safety

problem."

The veteran engineer who runs the one-person, remote control operation at IRR's Indianapolis yard made his position clear: "I am in absolute control of the train, so there is no possibility of miscommunication between myself and the engineer. I control the speed of the train and, therefore, can more-safely make decisions concerning my own movement on and off the train. In the previous two-man operation, I had to make certain assumptions about what the engineer was going to do."

Further, he said, "If I must react to an emergency situation, less reaction time is needed by eliminating additional communication to an engineer. The possibility of delayed response, panic, or an incorrect response is not a factor of concern when I am in control of the train's movement."

Testimony from the Red River Valley & Western was equally strong on the safety issue: "While the equipment has not performed flawlessly, we are particularly pleased that not once did the fail-safe aspects of the design fail to operate effectively. We have not had any derailments, accidents, or injuries where there has been any involvement (with) operation of the remote control equipment."

In RRVW's view, "Our remote locomotive operation is safer than traditional railroad practice wherein miscommunication is possible when information, either verbal or visual, needs to be passed between the 'engineer' and the 'ground person.'"

The experience of the Vermont Railway/Clarendon & Pittsford follows the pattern: "The safety record has been perfect. Not one incident has occurred due to either a malfunction of the unit or caused by the use of the unit. There have not been any grade crossing incidents with this unit, (and) there have not been any incidents... that were caused by the use of a one-person crew."

SUPPLIERS STEP UP

On the supplier side, in addition to Canac, FRA heard from Vectran Corp., Theimeg, Inc., Control Chief, and Cattron, Inc.

Vectran delivered its first systems 20 years ago, and since then has sold more than 800 locomotive control systems to upwards of 100 railroads and industrial customers in the U.S., Canada, Australia, New Zealand, and South America. That's in addition to its furnishing more than 2,000 other systems for the control of other types of mobile equipment and cranes. Vectran has supplied equipment to WC and W&LE as well as to a number of smaller roads. It's also continued to invest in equipment enhancements, spending more than $500,000 since 1991 for research and development, both in-house and using the resources of Carnegie Mellon Research Institute in Pittsburgh.

With all this equipment in service, the company told FRA, the safety record "has been exemplary. In every instance of fatality or serious/lost-time injury known to us, no failure or other fault that would have caused the accident has ever been found with the Vectran equipment."

Theimeg, Inc., has had a North American operation only since 1985, but its German parent company claims to be the largest supplier of locomotive remote control equipment, worldwide. By Theimeg's count, more than 10,000 railroad remote control systems have been installed, and it has accounted for approximately 60%, with more than 2,500 systems in use on major railroads and the rest on short lines. The list of national railroads using remote control equipment includes every major system in Europe, plus railways in Canada and Australia.

Theimeg shipped its first locomotive systems in 1979, and since that time "no accidents attributable to malfunction of the remote control have occurred. Furthermore, the overall number of accidents in the operations which implemented the use of remote control was significantly reduced." (Perhaps

significant in light of U.S. union protests, the company notes that the initial push for use of remote control in Germany "was a result of the desire of laborers in steel mills to reduce the number of accidents that occurred during locomotive operations.")

International safety standards being developed in Europe, Theimeg says, have allowed railroads and suppliers to develop products and plans "that make the operations on the railroads continuously safer. Risk analysis techniques, combined with projections of future implementation of state-of-the-art technologies, have shown that the use of radio remote control systems can significantly reduce the number of accidents in railroad operations."

All this is not to say that operations are risk-free. But risk potential has been minimized. For example, an unwanted and unexpected stop caused by emergency brake application resulting from loss of communication could catch an operator by surprise. So to handle this risk, the spec was changed to prevent excessive braking and provide a smoother stop, and to provide an audible alarm that an unwanted stop was about to occur.

There is international scope also to Control Chief's operations. Most of the 10,000 remote control systems it's delivered have been applied to bridge cranes and other materials-handling functions, but it also has several hundred locomotive systems in service on railroad and industrial units.

Control Chief's is a throttle position control system with redundant safety features built into throttle and braking functions and with several other safety-directed standard and optional features. Like other control system suppliers, Control Chief puts emphasis on the safety factor of single-operator control that eliminates communications problems and makes the job performance faster as well as safer.

As for Cattron, most of the 300-plus locomotives equipped with its remote control system are in steel mills or in coal-and grain-handling applications, with New Zealand's Tranzrail its major railroad customer.

Design of Cattron's systems has been based on the principle of giving a remote operator the capability to perform any function he could handle if he were in the locomotive cab, and perform it better and more safely because of communications improvements.

One improvement, Cattron notes, has to do with one-person operation: "There are fewer people in the command chain for control of the locomotive." A second improvement results from the method of communication. Radio remote control signals are constantly being transmitted, constantly in communication with the locomotive, and any loss of that communication brings the unit to a stop. This, Cattron believes, is a much safer communications method than the "on-demand" communications associated with two-way voice radio.

FIRE FROM LABOR'S BIG GUNS

For its part, rail labor rolled out the heavy artillery at the FRA inquiry, including UTU's U.S. and Canadian national legislative directors, the union's designated legal counsel, and the BLE's national legislative director.

Earlier, UTU had attacked remote control in strong terms: "One person with a joystick controlling a 4,000-hp locomotive hauling hazardous materials! This is insanity we will fight tooth and nail." UTU had also warned that "if the FRA allows widespread operations of remotely controlled locomotives, one of them will surely malfunction and kill one or more people, or derail and spill a carload of deadly chemicals. Only by being a party to a pointless death and disaster will the FRA and rail carriers be forced to rethink this insanity. We are urging them to rethink now, before the inevitable happens."

Much of labor's case at the December inquiry consisted of challenges to the safety records on WC and CN. At one point, a union spokesman suggested that if FRA were to conduct remote control tests, it conduct them at the Transportation Technology Center--presumably to spare railroad employees from

having to face the alleged hazards of remote control operations.

THE TECHNOLOGY'S GROWTH

Remote control is far from being a new technology in railroad related operations, and its use extends well beyond applications for locomotive control. Earlier examples include the development of remote guidance systems for overhead traveling shop cranes and for mobile car spotters.

More recently, suppliers of radio-based control equipment have applied the technology to the operation of gates on ballast cars and other .types of bottom-dump equipment and to the loading/unloading of intermodal trailers and containers. In ballast dumping operations, RF control provides more precise placement of the quantities needed, car by car, gate by gate, inside or outside the rail. Remote control also makes ballast application a safer operation. The operator no longer has to brave sometimes-uncertain footing to walk alongside the cars to open and close gates manually. And with the ability to control dumping from a distance, maintenance-of-way employees are no longer exposed to dust conditions created when ballast drops to the roadbed.

Several such systems are in use. Telemotive, for example, has applied remote control of Miner gates to a number of cars for Union Pacific. But perhaps the largest application has been use of Cattron control equipment on DIFCO cars, with about 1,250 cars equipped for remote operation in the last four years.

In addition to the safety advantages, DIFCO notes, use of the portable radio remote control equipment saves both material and time. Railroads have estimated material savings at about 15% because of the precise control of dumping. And with radio instead of manual control, a 50-car ballast train can typically be unloaded in about four hours as compared to eight hours required to unload manually.

DIFCO can install the remote system on existing equipment or on its own design car and gates, the Autoballaster. In either application, each car is equipped with a Cattron radio receiver powered by a 12-volt battery kept charged by a solar cell or by an alternator powered by an air motor. Valves controlled by the remote transmitter regulate the operation through hydraulic actuation of the cylinders that control the gates. The transmitter itself is programmed for individual car and individual gate control.

Newer on the scene is remote control of intermodal loading/unloading operations, and thus far only one U.S. terminal is equipped, the Neomodal facility, in northeast Ohio where Telemotive RF equipment controls operation of three Mi-Jack cranes.

This type of control gives the operator a different perspective, as compared to the one provided from a cab on the crane itself, and it can provide more precision in taking hold of the box and positioning it properly.

Neomodal is a non-railroad-owned terminal operated by a railroad that has had experience with locomotive remote control, Wheeling & Lake Erie. And while the Ohio facility is a one-of-a-kind operation now, railroads have expressed interest in the technology, and one major Class ! carrier was completing a report last month as to the potential for remote control applications in its own intermodal terminals.

Perhaps the granddaddy of all major railroad uses of remote control equipment, however, was the accelerator car--known to those on the scene simply as the mule-- which was to have helped New York Central operate more efficiently at its new Elkhart, Ind., Yard, dedicated in 1958, almost 40 years ago (RA, March 3, 1958, p. 35).

Under Alfred E. Perlman, president at the time, NYC was a technological innovator. Its researchers developed equipment for operating in-train slave units and for remote controlling locomotives in terminals. And they developed Elkhart's mule. According to NYC officers at Elkhart at the time, the mule

worked perfectly in all its tests. It was intended as a prototype for units to be used at other NYC yards. But in actual yard operation, it never moved a car. It sat on its spur for several months and then was hauled away to the scrap yard.

Some things change: NYC brought the whole Elkhart construction job in for about $14 million, and you know how much yard that would buy today. But other things don't change: Elkhart's mule never shoved a car because the rail labor organizations wouldn't let NYC use it.

DIALOG(R)File 148:Gale Group Trade & Industry DB
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08018607 SUPPLIER NUMBER: 17333192 **(THIS IS THE FULL TEXT)**

The express through GSM country. (railway radio communications)

Josifovska, Svetlana

Electronics Weekly, n1726, p18(2) May 31, 1995

TEXT:

Fast trains pose problems for the GSM frequencies of railway radio communications. Svetlana Josifovska looks at how the industry hopes to solve the problems

The European railway industry is a step closer to accepting a common set of GSM frequencies for railway radio communications. It is a significant step in adoption of new technology and its harmonisation across Europe.

But the industry could experience a plethora of other troubles before the turn of the century directly related to the appearance of new technologies. Train operation and passenger requirements are getting more refined and specific.

Trains are becoming faster with a host of technological advances on board. And some of these technologies are evolving fast.

"GSM is continuing to be improved and the capabilities of GSM are certainly increasing beyond what was originally envisaged," said Dr Wally Tuttlebee, business development manager at Roke Manor Research.

At present each European country has its own analogue technology used on railways and each international train has a multitude of switches in order to communicate with international railway control desks. A standard GSM-Rail set of frequencies. is necessary to ensure there is no interference with any other communication system across Europe and to avoid the high costs associated with developing various train communications systems for different countries.

But although the problem of a common set of frequencies will be solved in a matter of weeks there is a further concern. GSM-R has currently been specified for trains that develop speeds up to 250kph. Trains of the future will attain average speeds of up to 500kph. But will a GSM link to high-speed trains be able to sustain a good quality signal? This question and others have been the focus of recent research undertaken at various organisations in different countries.

Recent simulations have been conducted at Roke Manor Research in the UK and Detecon in Germany.

In the first test case a GSM full-rate voice channel down-link has been simulated from track-side base stations onto moving trains. The simulation has been performed in detail using a Monte Carlo approach, which points to the best real-time behaviour pattern achieved statistically.

The channel has been simulated in different environments such as rural

areas, typical urban areas and hilly terrains and using three different antenna topologies one with no diversity and two with different diversity schemes.

Diversity means getting the same signal via different paths. Antenna diversity is when two or more antennas are providing and/or receiving the signal.

In the test two types of antenna diversity have been used; a receiver and transmitter diversity by placing the antennae at the train or base station end respectively. By using diversity it was expected that the bit error rates, signal to noise ratio and hence the quality of the link would be improved.

Simulation results have shown that for the 'no diversity' scheme, only one antenna per receiver and transmitter is required, but the signal then has to be equalised in order to correct the multipath distortion in the radio channel.

The cases with antenna diversity have shown significant benefits. Bearing in mind this outcome and the practical consideration, such as resources available and technical feasibility, the operator needs to decide whether or not to use diversity and which one.

The operator will need to assess its resources in order to achieve the most satisfactory signal to noise ratio along the railway line.

If transmitter diversity is to be used then the antennas need to be installed alongside the track at the base-stations. The number and length of the tracks directly relates to the costs of introducing transmitter diversity. Whilst if receiver diversity is to be introduced then this will be necessary only on the high-speed trains which will be a 'per train' cost. Diversity will not necessarily improve the signal if there is a good direct link in the radio channel.

Simulation results with a rural area terrain profile from Detecon, have shown that the high-velocity problem of GSM at 500kph can be solved either by increasing the signal to noise ratio by approximately 2dB, or by increasing the Rice parameter (the measure of the quality of the direct path) for standard GSM mode of 0dB to 6dB for the railway channel.

By doing so the bit error rate (BER) and block error rate does not worsen compared to the 250kph train case with a standard channel. For a strong direct path the Rice parameter is high.

This can be achieved by carefully planning the radio coverage along the railway line if a standard GSM receiver is to be used and no additional hardware is to be introduced.

But as all of these solutions are waiting to be synchronised, another problem may be looming over the horizon for the railway people. The appearance of UMTS (Universal Mobile Telecommunication System) in the 2GHz band threatens to eclipse GSM entirely at the turn of the century.

The railway industry is already poised to incorporate UMTS on trains and is preparing a list of requirements that it would like to see addressed.

"People will like to use their existing switches and infrastructures," said Dr Turtlebee. "The need of operators building on their existing equipment certainly needs to be addressed."

The proposal for UMTS on trains for EU funding as part of the Forth EU Framework, has already been submitted. The proposal was made by a consortium of companies led by Smiths System Engineering. The project will address only the part of UMTS that covers railways. This will include vital and non-vital operation communications on trains and passenger enhancement services such as video-telephony and video-conferencing.

DIALOG(R)File 148:Gale Group Trade & Industry DB

07227026 SUPPLIER NUMBER: 14949606 **(THIS IS THE FULL TEXT)**

Hearing could open door for wireless system on nation's trains. (Federal Railroad Administration proposed use of mobile communications system for Advanced Train Control System) (Agencies)

Washington Telecom News, v2, n13, p8(2)
March 28, 1994

TEXT:

Executive Summary: A federal agency begins a congressionally mandated hearing this month to examine railroad radio communications systems that--although not specifically on the agenda--could pave the way for a projected Advanced Train Control System (ATCS) using enhanced wireless techonlogies.

Although existing types of voice radio communications now in use on most U.S. rail systems are the central focus of a congressionally mandated public hearing in Washington March 29, that hearing could lead to more serious discussions to replace standard radio equipment with more sophisticated wireless technologies, we have learned.

The Federal Railroad Administration (FRA), a Department of Transportation agency, already has held two "roundtable discussions" that suggest that wireless "sciences" are the rail lines' "new opportunities" for a variety of improvements, including transmitting business data, authorizing train movements, working with customers and ensuring the health and safety of locomotives and its passengers.

The discussions, we have learned, already have explored possibilities for "incremental" or "building block" approaches toward an Advanced Train Control System (ATCS), involving a variety of advanced technologies including wireless technologies.

While the March 29 hearing in Washington, D.C., does not address ATCS directly, transcripts of the earlier FRA "roundtable" discussions will be submitted for the hearing record, and issue may be addressed by public comment scheduled at the end of the hearing.

While the North American rail industry continues to develop ATCS projects, the railroads still are dependent on radios to digitally transmit safety information communicated through end of train (EOT) telemetry sysstems.

Improved train radio transmissions have made communications breakdowns rare along the system and have replaced older communications methods such as telegraph and landline telephone messages. Orally transmitted radio are now common between trains and even between railroad systems.

Congress, nevertheless, in 1992 passed a Rail Safety Enforcement and Review Act that called for "better quality" radio communications and to report back to Congress on the following:

* Advantages or disadvantages of requiring that every locomotive be equipped with a railroad voice communications system capable of permitting a person in the locomotive to engage in clear two-way communications with persons on following and leading trains, and with train dispatchers located at railroad stations;

* Requirement replacement radios be available at intermediate terminals;

* The effectiveness of radios in ensuring timely emergency response;

* The effect of interference and other disruptions of radio communications on safe railroad operations;

* The status of Advanced Train Control Systems (ATCS) that are being developed and the implications of such systems for effective railroad

communications; and

* The need for minimum federal standards to ensure that such systems provide for positive train sparation and are compatible nationwide.

FRA plans to direct the focus of the March 29 hearing on the first five issues, but said the hearing "also comprehends the issues of ATCS and other next-generation train control technologies."

DIALOG(R)File 148:Gale Group Trade & Industry DB

07217586 SUPPLIER NUMBER: 14953994 **(THIS IS THE FULL TEXT)**
Vectran Corp. (relocates) (Brief Article)
Railway Age, v195, n3, p 25(1)
March, 1994

TEXT:

VECTRAN CORP. has relocated its headquarters, engineering, and manufacturing operations to a larger facility as a result of increased demand for its radio remote control systems for locomotives, cranes, and other material handling equipment. The new address is 2170 William Pitt Way, Pittsburgh, PA 152381357; Tel. (412) 9634-1221; FAX (412) 963-7205.

DIALOG(R)File 636:Gale Group Newsletter DB(TM)

03529576 Supplier Number: 47292335 **(THIS IS THE FULLTEXT)**
MATRA COMMUNICATION/AEG MOBILE COMMUNICATION: GSM-R technology
M2 Presswire, pN/A April 14, 1997
TEXT:
M2 PRESSWIRE-14 April 1997-MATRA COMMUNICATION/AEG MOBILE COMMUNICATION: GSM-R technology -- Digital future for railway radio communications (C)1994-97 M2 COMMUNICATIONS LTD

RDATE:130397

* In the very near future, railways will be able to conduct all of their operational communications using digital radio networks based on an expanded form of the GSM standard. AEG Mobile Communication is extensively involved with both the standardization of the systems technology and the first pilot realizations.

Today, many diverse radio communications systems are in use by international railway operators. Conductors, for example, communicate using a train radio system which operates in the 460 MHz frequency range. Maintenance personnel use an independent operations and maintenance radio which operates in the 160 and 460 MHz ranges. In railway shunting, a special radio system with usable frequencies of 80, 160, and 460 MHz is used. Railway bus-drivers normally use a 160 MHz vehicle- mounted radio system. Direct control of the trains is accomplished using a routed train control system. In addition to these, there are also tunnel radios, radio telephones - for use in and around train stations, and paging systems - for two-way communication between conductors while underway.

The DIBMOF Research Project This bewildering multiplicity of systems

might soon be standardized thanks to a new standard designated as "GSM-R" (the R standing for railway). GSM-R is an expanded version of the existing world standard GSM that is designed to optimize railway-specific operations. The first steps in this direction were taken long ago. As early as 1989, the German Railways (Deutsche Bahn AG), with the support of the BMBF (Federal Ministry for Education and Research) and the Berlin senate, began the DIBMOF (integrated services mobile radio network for railways) research project. The aim of this project is to bring about the realization of a modern radio communications system.

What is needed is a communications system which can fulfill the following requirements:

- reliable, high-quality transmission at even the highest rates of speed,
- uniform safeguards and transmission procedures,
- minimal connect times,
- rapid short data transmission,
- integration of the railway's internal services; both those with and without safety responsibilities,
- a basis for a train control system with built-in safeguards,
- possibility for future expansion to include such services as packet-based networks

It was very quickly recognized during a feasibility study that the standard which was already available and in public use at the time, GSM, could serve as an ideal base if its functionality were expanded to accommodate the railway industry's technical requirements. In 1993, the UIC decided to work out the specification "GSM-R," which is also being incorporated into the ETSI specification "GSM Phase 2 +".

Special Challenges Presented by DIBMOF Test Route Beginning in 1995, the ICE high speed route between Stuttgart and Mannheim was equipped along 70 km of its length with GSM-R compatible radio switching equipment for the purpose of validating GSM-R's system parameters. The layout consists of a GSM Mobile Switching Center (MSC), three base station controllers (BSC), and 24 base transceiver stations.

AEG Mobile Communication provided one base station controller with base tranceiver stations for the central section of the DIBMOF test stretch. This section of the test line presented a special challenge from the outset in that radio coverage had to be provided for no less than five separate tunnels. In addition, the topography of the area, with its mountains and deep recesses, posed an especially interesting challenge for the propagation tests. Test runs have been conducted along the DIBMOF route since June, 1996. During these tests, two different types of AEG Mobile Communication GSM-R radio sets have been employed:

- The ZFM 90 mobile train radio is a portable radio set with 8 watts output power utilizing a V.24 interface for automated detection of test values,
- The 9070R lightweight mobile corresponds in large part to the TP 9070 DTFX with an interface for a PCMCIA PC adapter.

These tests serve to continually optimize the system parameters and are expected to help expedite the creation of an efficient communications platform for high-speed, cross-border traffic. The radio system was able to prove that it can provide absolutely reliable voice and data communications even at speeds as great as 280 to 300 kilometres per hour.

The DIBM0F test route lies between Stuttgart and Mannheim. This test line is part of the planned European high-speed network which is why the test line serves as a harbinger of things to come when the GSM-R-Standard is eventually put into international service.

The lessons learned from the on-going test and measurement runs are

expected to be incorporated into the future operations control system to be used by European railways for their high-speed routes. In addition to voice communication, data transmission will also play a central role in safety-related tasks. The first tests of the integrated train control system ETCS (European Train Control System) are expected to begin sometime in the first half of 1997.

Compact Base Stations and a High Degree of Redundancy The highest safety specifications must be satisfied throughout the entire GSM-R system due to the planned inclusion of automatic train control capability. The area covered by a given BSC, therefore, usually consists of several part sections. All the base stations of each part section are linked to one another and to the BSC at both ends in order to form a completed loop. In this way, the system can remain fully operational in the event that a network circuit is interrupted. The BSC is equipped with a dual switching computer which operates in hot-standby mode.

AEG Mobile Communication also placed especially high emphasis on system redundancy in the development of base stations. The outdoor base station "Teleregent S8000R" can contain up to eight transceiver modules with high input sensitivity and up to 35 watts transmitting power. All the essential system components are doubly redundant and are designed to automatically form redundancy loops.

The super compact micro-base-station "Teleregent S2000R weighs a mere 30 kg and is designed for on-site use in temperatures as low as -40 degrees Celsius whether placed in narrow tunnels or directly on signal masts. A convection cooling system ensures that the S2000R will function reliably without a fan in temperatures as high as + 50 degrees Celsius. The micro-base-station's dual- carrier execution meets the railway industry's system redundancy requirements.

In terms of end-user equipment, AEG Mobile Communication has worked out a two-phase migration concept for the upgrade from analog to digital systems, while at the same time offering complete, purely digital GSM-R mobile stations for direct replacement of analog technology in the various types of locomotives. AEG Mobile Communication is thus far the only manufacturer to offer both handheld (TP 9070R) and mobile stations (ZFM 90) operating in the railway frequency range.

The Differences between GSM-R and GSM GSM-R, the digital standard for railway communications, is based on the existing, internationally-established GSM- Standard. In accordance with a June 1995 recommendation from CEPT (Conference Europeene des Administrations des Postes et Telecommunications), there are 19 international radio channels at intervals of 200 kHz between 876 and 880 MHz for uplinks (mobile unit transmitting frequencies) and between 921 and 925 MHz for downlinks.

The voice communications capabilities should support the following specifications, which have been worked out in ETSI for GSM phase II+. Alongside the group call and the broadcast cyclic call, these capabilities should include the assignment of differing priorities to each call in order to guarantee e.g. emergency calls.

Absolute priority is given to the processes for automatic train control and train safety. The GSM-R system must, for example, be able to transmit route profiles to the vehicle and just as easily update route maps with detailed descriptions of the route and the current density of rail traffic on a given line.

In general, it is important to ensure that all users can be reached using functional addresses (train number, engine number, car number, or function name), although the system itself only supports subscriber numbers. For this reason, an automatic correlation between functional addresses and subscriber numbers must take place within the system. Lastly, location-dependent

addressing is also desirable.

GSM-R and European Railways Digital railway radio communication is not only being promoted in Germany. As a follow-on to the DIBMOF project, France and Italy will each set up GSM-R test lines approximately 100km in length in 1997 under the aegis of the international project EIRENE (European Integrated Railway Radio Enhanced Network) and the European research project MORANE (Mobile Radio for Railway Networks in Europe). In France, the job of equipping the test line has already been given to Matra Communication / AEG Mobile Communication.

In all, according to estimates of the European railway union UIC (Union Internationale de Chemain de Fer), approximately 90,000 km of rail will be equipped with the new technology by the year 2007. The industry expects the digital railway communications field to achieve a market volume in the billions.

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